ECONOMICA

NEW SERIES
Volume XIV
Numbers 53—56
(1947)

REPRINTED 1967 FOR
Wm. DAWSON & SONS Ltd., LONDON
WITH THE PERMISSION OF
THE LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE

INDEX TO *ECONOMICA*

New Series, Volume XIV, 1947 (Numbers 53–56)

AUTHORS

Bauer (P. T.) Malayan Rubber Policies. p. 81.
Baumol (W. J.) Mathematics for Economists. p. 310.
Baumol (W. J.) Notes on the Theory of Government Procurement. p. 1.
Booker (H. S.) Have we a Full Employment Policy ? p. 37.
Coase (R. H.) The Marginal Cost Controversy : Some Further Comments. p. 150.
Coase (R. H.) The Origin of the Monopoly of Broadcasting in Great Britain. p. 189.
Cockfield (F. A.) The Distribution of Incomes. p. 254.
Hahn (F. H.) A Note on Profit and Uncertainty. p. 211.
Lachmann (L. M.) Complementarity and Substitution in the Theory of Capital. p. 108.
Marrama (Vittorio) Some Observations on Professor Lange's Analysis. p. 120.
Nordin (J. A.) The Marginal Cost Controversy : A Reply. p. 134.
Norris (Harry) State Enterprise Price and Output Policy and the Problem of Cost Imputation. p. 54.
Paish (F. W.) Cheap Money Policy. p. 167.
Pigou (A. C.) Economic Progress in a Stable Environment. p. 180.
Roberts (R. O.) Comparative Shipping and Shipbuilding Costs. p. 296.
Sen (S. R.) Sir James Steuart's General Theory of Employment, Interest and Money. p. 19.
Tawney (R. H.) In Memory of Sidney Webb. p. 245.
Thirlby (G. F.) The Marginal Cost Controversy : A Note on Mr. Coase's Model. p. 48.
Wilson (T.) A Reconsideration of the Theory of Effective Demand. p. 283.

LIST OF TITLES

Cheap Money Policy ; by F. W. Paish. p. 167.
Comparative Shipping and Shipbuilding Costs ; by R. O. Roberts. p. 296.
Complementarity and Substitution in the Theory of Capital ; by L. M. Lachmann. p. 108.
The Distribution of Incomes ; by F. A. Cockfield. p. 254.
Economic Progress in a Stable Environment ; by A. C. Pigou. p. 180.
Have we a Full Employment Policy ? By H. S. Booker. p. 37.
In Memory of Sidney Webb ; by R. H. Tawney. p. 245.
Malayan Rubber Policies ; by P. T. Bauer. p. 81.
The Marginal Cost Controversy : A Note on Mr. Coase's Model ; by G. F. Thirlby. p. 48.
The Marginal Cost Controversy : A Reply ; by J. A. Nordin. p. 134.
The Marginal Cost Controversy : Some Further Comments ; by R. H. Coase. p. 150.
Mathematics for Economists ; by W. J. Baumol. p. 310.
A Note on Profit and Uncertainty ; by F. H. Hahn. p. 211.
Notes on the Theory of Government Procurement ; by W. J. Baumol. p. 1.
The Origin of the Monopoly of Broadcasting in Great Britain ; by R. H. Coase. p. 189.
A Reconsideration of the Theory of Effective Demand ; by T. Wilson. p. 283.
Some Observations on Professor Lange's Analysis ; by Vittorio Marrama. p. 120.
Sir James Steuart's General Theory of Employment, Interest and Money ; by S. R. Sen. p. 19.
State Enterprise Price and Output Policy and the Problem of Cost Imputation ; by Harry Norris. p. 54.

SUBJECTS

Economics, Applied. Paish (F. W.) Cheap Money Policy. p. 167.
—— Booker (H. S.) Have we a Full Employment Policy ? p. 37.

Economics, Bauer (P. T.) Malayan Rubber Policies. p. 81.
—— Baumol (W. J.) Notes on the Theory of Government Procurement. p. 1.
—— Norris (Harry) State Enterprise Price and Output Policy and the Problem of Cost Imputation. p. 54.
Economics, Pure Theory. Lachmann (L. M.) Complementarity and Substitution in the Theory of Capital. p. 108.
—— Pigou (A. C.) Economic Progress in a Stable Environment. p. 180.
—— Thirlby (G. F.) The Marginal Cost Controversy : A Note on Mr. Coase's Model. p. 48.
—— Nordin (J. A.) The Marginal Cost Controversy : A Reply. p. 134.
—— Coase (R. H.) The Marginal Cost Controversy : Some Further Comments. p. 150.
—— Baumol (W. J.) Mathematics for Economists. p. 310.
—— Hahn (F. H.) A Note on Profit and Uncertainty. p. 211.
—— Wilson (T). A Reconsideration of the Theory of Effective Demand. p. 283.
—— Marrama (Vittorio) Some Observations on Professor Lange's Analysis. p. 120.
Economic Theory, History of. Sen (S. R.) Sir James Steuart's General Theory of Employment, Interest and Money. p. 19.
Economic History. Coase (R. H.) The Origin of the Monopoly of Broadcasting in Great Britain. p. 189.
—— Tawney (R. H.) In Memory of Sidney Webb. p. 245.
Statistics. Cockfield (F. A.) The Distribution of Incomes. p. 254.
—— Roberts (R. O.) Comparative Shipping and Shipbuilding Costs. p. 296.

REVIEWS

Allen (G. C.) and others. *The Import Trade of the Port of Liverpool.* By Vera Anstey. p. 235.
Andrus (J. R.) *Basic Problems of Relief, Rehabilitation and Reconstruction in South-East Asia.* By Hla Myint. p. 232.
Bank for International Settlements. *Sixteenth Annual Report.* By J. K. Horsefield. p. 160.
Basu (Saroj Kumar) *Recent Banking Developments.* By J. K. Horsefield. p. 229.
Baykov (Alexander) *Soviet Foreign Trade.* By Vera Anstey. p. 333.
Boulding (K. E.) *The Economics of Peace.* By A. S. J. Baster. p. 75.
Britain and World Trade : Report by P.E.P. By D. J. Morgan. p. 320.
Cairncross (A.) *Introduction to Economics.* By Jean Kerrigan. p. 321.
Chamberlin (Edward Hastings) *The Theory of Monopolistic Competition. A Re-orientation of the Theory of Value.* S. N. p. 77.
Clark (G. N.) *The Wealth of England from 1496–1760.* By T. S. Ashton. p. 226.
Coupland (Sir Reginald). *India. A Re-statement.* By Vera Anstey. p. 318.
Derksen (J. B. D.) *A System of National Book-Keeping.* By R. C. Tress. p. 72.
Die Schweiz als Kleinstaat in der Weltwirtschaft. By Charlotte Leubuscher. p. 336.
Fisher (A. G. B.) *International Implications of Full Employment in Great Britain.* By H. S. Booker. p. 70.
Friedman (M.) and Kuznets (S.) *Income from Independent Professional Practice.* By T. Barna. p. 64.
Gray (Alexander) *The Socialist Tradition. Moses to Lenin.* By F. A. Hayek. p. 154.
Halm (George N.) *Monetary Theory.* By R. S. Sayers. p. 317.
Hawtrey (R. G.) *Bretton Woods for Better or Worse.* By E. Victor Morgan. p. 158.
Jacoby (Neil H.) and Saulnier (Raymond J.) *Business Finance and Banking.* By J. K. Horsefield. p. 331.
Keynes (Florence Ada) *By-Ways of Cambridge History.* By C. R. Fay. p. 324.
Kidner (Frank L. R.) *California Business Cycles.* By W. J. Baumol. p. 162.
Knight (Frank H.) *Freedom and Reform.* By L. M. Lachmann. p. 314.
Kriz (Miroslav A.) *Post-War International Lending.* By J. K. Horsefield. p. 230.
Kuznets (S.) *National Income.* By A. L. Bowley. p. 63.
Kuznets (S.) *National Product Since 1869.* S. N. p. 337.
Lafitte (François) *Britain's Way to Social Security.* S. N. p. 77.
League of Nations. *The Course and Control of Inflation.* By J. K. Horsefield. p. 230.

McDiarmid (O. J.) *Commercial Policy in the Canadian Economy.* By Vera Anstey. p. 334.
Marshall (Mary Paley) *What I remember.* By C. R. Fay. p. 324.
Mendershausen (H.) *Changes in Income Distribution during the Great Depression.* By T. Barna. p. 68.
Mills (Frederick C.) *Price Quantity Interactions in Business Cycles.* By W. J. Baumol. p. 327.
National Income of Palestine, 1944. S. N. p. 337.
Nogaro (Bertrand) *La Monnaie et les Systèmes Monétaires.* By J. K. Horsefield. p. 227.
P.E.P. *Britain and World Trade.* By D. J. Morgan. p. 320.
Prokopovicz (S. N.) *Russlands Volkswirtschaft unter den Sowjets.* By M. Polanyi. p. 156.
Rao (V. K. R. V.) *The Post-War Rupee.* By Vera Anstey. p. 335.
Review of the Trade of India, 1943–44. By Vera Anstey. p. 236.
Die Schweiz als Kleinstaat in der Weltwirtschaft. By Charlotte Leubuscher. p. 336.
Schwenter (Jürg J.) *Kapitalexport und zwischenstaatliche Warenbewegungen.* S. N. p. 241.
Shenoy (B. R.) *The Sterling Assets of the Reserve Bank of India.* By Vera Anstey. p. 237.
Silberner (Edmund) *The Problem of War in Nineteenth Century Economic Thought.* By Frederick Hertz. p. 231.
Tetley (H.) *Actuarial Statistics.* Vol. I. By E. Grebenik. p. 239.
Wadsworth (J.) *Counter Defensive.* By J. K. Horsefield. p. 76.
Weatherburn (C. E.) *A First Course in Mathematical Statistics.* By E. Grebenik. p. 239.
Wilcox (Walter W.) *The Farmer in the Second World War.* By P. T. Bauer. p. 330.
Wilks (S. S.) *Mathematical Statistics.* By E. Grebenik. p. 239.

AUTHORS OF REVIEWS

Anstey (Vera), 235, 236, 237, 318, 333, 334, 335.
Ashton (T. S.), 226.
Barna (T.), 64, 68.
Baster (A. S. J.), 75.
Bauer (P. T.), 330.
Baumol (W. J.), 162, 327.
Booker (H. S.), 70.
Bowley (A. L.), 63.
Fay (C. R.), 324.
Grebenik (E.), 239.
Hayek (F. A.), 154.
Hertz (Frederick), 231.
Horsefield (J. K.), 76, 160, 227, 229, 230, 331.
Kerrigan (Jean), 321.
Lachmann (L. M.), 314.
Leubuscher (Charlotte), 336.
Morgan (D. J.), 320.
Morgan (E. V.), 158.
Myint (Hla), 232.
Polanyi (M.), 156.
Sayers (R. S.), 317.
Tress (R. C.), 72.

Made and Printed in Great Britain by The Hereford Times Ltd., General Printing Works (T.U
London and Hereford. L4458.

Vol XIV

Notes on the Theory of Government Procurement

By W. J. BAUMOL

AMONG its many other functions the government of a nation is also a purchaser of large quantities of goods. This function of procurement is assuming larger proportions than ever before with the constantly increasing size and scope of governments. This trend has been climaxed with the additional economic activities involved in the conduct of the last war, the attempts to prevent or mitigate an aftermath of virtually worldwide famine, and government's part in encouraging reconstruction and reconversion to peacetime industry. Concomitantly, the effects of government procurement on the entire economy have become correspondingly more important.

Having been close to the problem in the United States Government, I have come to feel that a theoretical analysis of the nature and effects of government procurement might be of interest and not without practical application.

A government purchases primarily for two purposes—for the sake of obtaining the items purchased, and for the effect the purchase is apt to have on the economy. More specifically, a purchase is made for one of the following reasons:

1. Because of actual need for the item whether on the part of the agencies of the government itself or on the part of others to whom the government intends subsequently to donate or resell the item.

2. Because of the effect of the purchase on the market. In this connection the following purposes may be achieved:

   (*a*) the market price may be influenced, e.g., it may be stabilised or raised to insure the income of a particular group; or

   (*b*) employment may be provided by direct demand on the part of the government or by increasing the quantity of money in circulation.

Of course, a single purchase may, and often must, serve a combination of these purposes.

These functions of government procurement are not limited to any one government but, with the possible exception of the last point in the case of a socialist economy, are uses to which procurement are or can be put by every government.

It is evident from the foregoing that the government is not an ordinary purchaser. It is primarily the fact that a government often purchases for other reasons than direct consumption that distinguishes it from the ordinary purchaser. The possibility of alternative purposes in making a purchase is possible only as a result of the magnitude characteristic of most government purchases, the gargantuan nature of which is such as to leave profound effects on the country's economy, thereby making procurement a suitable instrument of control. Because of these secondary effects on the economy, our analysis also becomes more complicated. They render inapplicable an atomistic (competition) analysis and, in so far as procurements are significant enough to affect commodities other than those being purchased, at least a veneer of general equilibrium methodology must be introduced.

In this paper I will cover the various alternative courses which may be pursued by a government in making purchases, and I will consider under what circumstances each of these may be most profitably employed. This brings up the question of the purpose the government may have in choosing a procurement method, a question with more room for complication than an analysis of the purpose of the procurement itself. For in choosing a procurement method a government may have an eye on economy as well as the achievement of its ultimate purpose in making the purchase, and the simultaneous achievement of both these aims might involve more difficulty than attainment of just one of them. The choice of a method of procurement may determine the nature and magnitude of the effect of the purchase of the commodity on the market for the commodity itself as well as on the market for closely related commodities.

It is convenient to consider the relationship between the purchase in question and the magnitude of the subsequent effect on the market price of the commodity purchased in the light of two characteristics of the price situation.

First, it may be assumed that the effect on market price of a given purchase will generally be greater, the greater the difference between the initial market price and the price paid by the government. If, for example, the government's demand price is considerably higher than the market's initial price and the quantity demanded is unlimited, the latter may have to rise considerably in order to induce any deliveries at all to private purchasers, and this rise would probably have to be greater than a rise necessitated by a government offer differing negligibly from the initial market price. In fact, if the market is such that no two prices can exist simultaneously for the same good, the change in market price must be exactly equal to the difference between the initial market price and the price actually paid by the government.

This brings up the second factor, price discrimination, which, for our purposes, I define as the difference between the price paid by the government and the price simultaneously paid by private purchasers for the same article.[1] I think we can safely assume that the effect of the government's purchases on market price will be greater, the smaller the degree of price discrimination possible under the conditions employed in making the purchase, i.e., the more closely market price must follow the price paid by the government.

If the government's purpose in the purchase is merely to obtain the item, then a government motivated by ideas of "financial prudence" is not interested primarily in the degree of price discrimination permitted by its mode of action except in so far as its actions are apt to have an extremely unsalutary effect on the economy. If, however, the government sets out with the purpose of influencing the market, the question of price discrimination obviously becomes its deep concern. It may be noted that a government completely uninterested in principles of "financial prudence", that is, one whose monetary policy is formulated chiefly with a view to preventing unemployment and inflation, would have no interest in the magnitude of the price it pays except in so far as it influences the market for the good purchased and for related "goods", notably labour. Such a government, while vitally interested in price discrimination, may, under certain circumstances, desire to buy cheaply so as to keep any price rise resulting from its purchases to a minimum, for a rise in price might be detrimental to employment,[2] and would almost certainly be inflationary.

I. Procurement Methods and Effects of Their Employment

Having decided to make a purchase, a government has several alternative methods of obtaining the commodities desired. These are:

1. If there is an organised market the government may simply make an open market purchase like any ordinary consumer; or
2. The government may issue public notification or notification to some specific seller or sellers that it is prepared to consider offers for the delivery of definite or unspecified quantities of the good; or

---

[1] A useful measure of degree of price discrimination might be $D \equiv 2(P_g - P_m)/P_g + P_m$ where P_g is the price paid by the government and P_m is the subsequent market price for the commodity purchased. If we take P_o to be the initial market price then we have the identity $P_m - P_o \equiv P_g - P_o - (P_g + P_m) D/2$, i.e., *so long as the effects do not cancel each other out.* The effect on market price of a government purchase will be greater the greater the difference in initial market price and the government's purchase price, and smaller the greater the degree of price discrimination *actually practised* at the time of the government purchase. This indicates that the statements in the text are partly tautologous.

[2] This would be the case where, in Dr. Lange's terminology, the monetary effect of a general change in prices is expected to be positive. For a rise in the price of one good tends to raise the general price level if the predominant relation between goods is presumed to be substitution (cf. J. R. Hicks, *Value and Capital*, Oxford University Press, 1939, pp. 311–12). A positive monetary effect is then equivalent to an increase in excess demand for money which would mean either a decrease in demand for commodities or an increase in the rate of interest or both, either of which can be detrimental to employment. The reverse holds, at least so far as employment is concerned, if the monetary effect is negative (cf. Oscar Lange, *Price Flexibility and Employment*, Principia Press, Bloomington, Indiana, 1944, Chap. 3).

3. The government may offer to purchase at a specific, announced price; or
4. The government may open negotiations for terms and conditions of sale with one or more sellers; or, finally,
5. The government may choose to requisition the desired items outright, with or without compensation.

The desirability of a given method of procurement to a government depends, of course, on the purpose for which the purchase is made. Thus, a descriptive analysis of the effect of choice of each purchase method is all that is possible *a priori*. I shall now attempt this, indicating in each case the application to which the method seems to be most suitable.

THE OPEN MARKET PURCHASE

The case where the government goes into the open market to make its purchases affects current market price in the same way as if an ordinary consumer had suddenly decided to increase his purchases. If the quantity desired is insignificant no change in market price should result. Given a purchase of significant magnitude, and unless the increase in demand is expected to be a continuing one, price will tend to rise. Long term adjustments are generally requisite in order for economies of scale to become operative, and where government procurements are made singly rather than as a stream, long term industrial capacity adjustments would generally not be profitable, in which case increased demand will only tend to increase price. The extent of the price rise would generally be determined by stock levels and the nature of the excess demand function for the market. The only significant difference in this case between government purchase and an increase in consumer demand is that here increased purchases and increased prices may not be expected to continue, so that buyers would find it prudent to postpone consumption to a greater extent than if the price increases were the result of private purchases. This would tend to keep the price rise to a minimum.

However, the qualifications here stated on the limitation on long run adjustments in the industry producing the commodity bought, and the tendency not to expect the price changes caused by government purchases to continue, is not something peculiar to the method of open market procurement. They may apply in any case where the government does not publicly announce or indicate a long term purchase programme.

Open market procurement should prove a useful method if it is desired to make small purchases cheaply, since it involves no expense of negotiation, publicity or other administrative expenses peculiar to alternative purchase methods. For larger purchases these overhead expenses may become negligible.

I doubt, however, whether the open market purchase is as well suited for other purposes which we will discuss. This is primarily because purchases made by this method generally would not affect market prices as much as methods involving calculated publicity. Also, since this method obviously allows no price discrimination, such purchases will tend to affect prices more than some methods allowing discrimination. Moreover, it is easily conceivable that, where price discrimination is possible, the government may be able to obtain a good at a lower price than is offered to other purchasers[1], so that large open market purchases may not even be very " economical ". Even where the government does not particularly desire economy, an announcement of willingness to accept deliveries under conditions convenient to the government at market price, or a price suitably related to the market, will probably prove more feasible, since the latter method permits initiative on the part of the government with respect to terms of delivery.

The Offer and Acceptance Method

Procurement by this method entails public notice or notification of any firms with which the government may desire to deal, that certain specified items are desired. Specifications for place, time and condition of delivery (all with stated tolerances) are generally included, and the quantity desired may also be specified. Offers are then requested, these offers listing a price at which the seller would be willing to deliver, and also proposing specifications for any factors which are not already specified in the government's announcement. It is the price offer which is of primary interest to us since we may consider any particular advantage offered in the way of specifications a close substitute for reduced price from the point of view of the government, at least for our present purposes.

The offer and acceptance method can, in many cases, provide the desired goods to the government at the lowest price obtainable without recourse to outright appropriation. If members of the trade have absolutely no idea as to the price the government is willing to pay, or the nature of the offers being presented by competing bidders, they will tend to offer prices close to the marginal cost of obtaining the quantities offered for delivery to the government (including user and opportunity as well as factor costs[2]). The position forced on the seller is the choice between a very small profit or the risk of obtaining no profit at all. If sellers are many and non-collusive the suspicion by an individual seller that a few of the group will make low offers will usually induce him to make a low offer himself. Further, not all offers need be low in order for the government to make its transaction cheaply so long as a sufficient quantity to fill the government's needs is offered inexpensively. Even if a firm knows the maximum price the government is willing to pay but does not know whether other firms are aware of this or whether, knowing it, they will make their offers correspondingly high, the firm's offers may continue to be low. Fear of being underbid and of losing any profit, however small, that might have been obtained in the transaction, may induce the firm to keep its offer price close to its marginal costs.

---

[1] In this case the degree of discrimination as defined in footnote 1, page 3, would be negative.

[2] The opportunity cost of a transaction is the loss of net profit entailed in not using the resources employed in this transaction elsewhere. The user cost of a transaction as defined by Lord Keynes, *The General Theory of Employment, Interest and Money*, Chap. 6, Appendix, is the anticipated loss entailed in not using these resources at some time later than they are actually employed. If these are not compensated for in the price of the transaction, it will pay the seller to employ the resources elsewhere or at some other time, so that the transaction may not take place.

Where sellers offer to make deliveries to the government at prices approximating the marginal cost of obtaining the goods, the latter may actually be able to buy at prices below the market price. This will tend to be true where large overhead expenses are involved, and the market price is sufficiently high to compensate for at least some of the firm's fixed costs.[1]

Thus, in any case where the market is highly competitive but firms are not so small as to render the sum of transaction costs prohibitive (in which case open market purchase may be cheaper), and where the highest price acceptable to the government is not believed generally known, an economy-minded government may not be able to purchase at a lower price than that obtainable by this method, for under no circumstances does it pay a seller to do business at a price which does not cover his marginal cost, except where he is trying to build up a market or drive a competitor into bankrupcy. Even in these cases the cost reduction would still accrue to the government under the offer and acceptance method.

Under the market situations considered to this point this method would also be useful to a government desirous of making a purchase, but at the same time desiring to minimize any inflationary effects of its purchase, for with price discrimination quite possible and the price paid by the government at a minimum, the quantity of money put into circulation by the purchase and the effect on market price may also be relatively small.

If purchases made by the government are regular and frequent so that sellers may be led to feel that it pays, in the long run, to " experiment ", that is, to charge relatively high prices at the risk of losing some particular sale in order to find the highest price they can successfully charge in the future, then the offer and acceptance method may no longer be very economical. If all sellers decide to " experiment " with higher prices simultaneously, the government will either be forced to refrain from buying altogether or it will have to pay the high prices demanded. Even if only a few sellers make inexpensive offers, so long as the quantity offered by them is insufficient to meet the needs of the government, some part of the purchase will have to be made at the relatively higher price.

---

[1] Marginal cost, of course, never includes any overhead expenses, by definition, since the latter do not vary with the magnitude of the firm's business.

If, in the course of repeated transactions or by any other means, the maximum acceptable price becomes general knowledge, no price offers may be low any longer, especially if the quantities desired for purchase are relatively high so that sellers have little fear of having their offers rejected. It follows that a government seeking to increase employment with the aid of its procurements, and where this purpose is deemed to require minimization of any concomitant price rise (see note 1, page 367), might usefully employ the offer and acceptance method. By " spreading the word " among sellers as to the maximum price the government is likely to pay, the actual price at which purchases are made may be quite high. In this way a large quantity of purchasing power may be thrown into circulation and yet, as a result of the likelihood of discrimination, it is quite possible that market price will not rise correspondingly. If the market is highly competitive the rise in market price will merely be the rise that would have resulted from the purchase of an equal quantity of the good on the open market. In the presence of elements of oligopolistic rigidity the rise in market price may even be entirely negligible.

Of course, even where the government's maximum acceptable purchase price is well known among sellers but the competitive situation is such as to cause the prevalence of some fear of being underbid, sellers will presumably continue to " charge what the traffic will bear", but this will now involve offer prices being below the maximum acceptable price to an extent corresponding to allowance for risk of complete loss of the sale as the result of underbidding.

It is to be noticed that if government purchases are frequent and regular, public announcement of the terms of sale, where entry into the particular selling field is free, will, in the long run, prevent price offers from going up to a point which would give sellers profits considerably higher than those obtainable in other lines of industry. In this event publicity may deter offers from deviating very much from the market price if there is an organised market to the extent that the revelation of the particular or general type of strategies of a firm are of advantage to competitors or other customers of the firm in the formulation of their plans. To compensate for this, the price to the government may have to be raised above the level necessary for the consummation of this sale in the absence of publicity.[1] It may be added that publicity may set a lower limit to the price at which sales can be made to the government by preventing firms from making offers at levels other members of the trade may regard as "treacherous".

The Method of Negotiated Price

Where the number of sellers in the trade is small or where, on the basis of past performance or for any other reason, the government desires to deal only with a few specific firms, it can notify these firms of the purchases it desires to make, and arrange for representatives of the interested parties to begin negotiations on a more or less informal basis. It should also be mentioned that negotiation may be resorted to where time is limited and the government cannot put the heavy machinery of offer and acceptance into operation.

---

[1] Of course, if the disadvantages of publicity are extreme enough, it is possible that no offers at all will be forthcoming.

The specific results apt to obtain from the use of this procedure are indeterminate. They depend on the extent to which the object of the government is in conflict with that of the sellers, the relative bargaining skill of the persons involved in the negotiations, the urgency with which the desired goods are needed by the government, the level of stocks available to the sellers, the competitive situation, and other similarly unpredictable factors. As a result, the price that is finally decided upon cannot be predicted with any degree of generality. It is clear, however, that a high degree of price discrimination is permitted by this method, so that by considering this and several other characteristics of the method, we can see the circumstances in which it would be advantageous.

When the government desires to procure a commodity which is sold by a very few firms open market purchase is simply not possible, since organised markets do not exist under such circumstances. Recourse to the offer and acceptance method would put the initiative entirely in the hands of the sellers who would, in this case, have little or no fear of being underbid. Negotiation involves facing the issue squarely and employing direct pressure toward an end where no indirect method of handling is conveniently available. This implies that negotiated price can, in the event of this type of market, be useful to a government seeking to purchase cheaply, whether for reasons of economy or as a means of minimizing inflationary consequences of its purchases.

This method is obviously useful to a government having no objection to paying a high price so long as price to other buyers is not greatly affected, in the belief that this course may aid in the achievement of a state of full employment. Such a course is one to which sellers may quite readily agree. A high price paid by the government is certainly to the sellers' advantage, and with price discrimination possible it would generally be advantageous not to raise price to other buyers more than it would be raised had the government bought the same quantity but at the lower price. The reason for this is that the price yielding maximum profits to sellers is completely determined by the nature of the market demand and by the quantity available for sale.[1] If, further, the government makes its high paying price contingent upon the maintenance of a low price to other sellers (as is sometimes the case in subsidy programmes), it may well pay sellers to maintain a market price acceptable to the government rather than forgo the profits resulting from the high price offered by the latter.

---

[1] In the very short period cost does not enter into the determination of the most profitable sales price since the quantity to be sold has presumably been produced, and so total costs are fixed. If the quantity available for sale is greater than that at which profits would be maximized, the quantity available does not affect the price at which sales are actually made. If, however, the available quantity is less than this, and the (*ceteris paribus*) demand curve is negatively sloping, it will pay to fix price at a level where just the quantity available is actually sold. This may readily be seen with the aid of ordinary Marshallian diagrams. Where selling costs

Another instance where the government may find the negotiated price a useful procurement method is, as already implied, where past performance or other reasons lead to belief in the superiority of the product or services offered by one or several particular firms. Where this or any other reason leads the government to prefer to deal with one or more specific firms, the method of negotiated price seems to be the most practical means of procurement. Any of the other methods, except outright expropriation, seem ill adapted to such a purpose. It is possible, of course, under the offer and acceptance method, to ask for bids from only a few firms, but in that case the likelihood of collusion is increased and the sellers' fear of underbidding correspondingly reduced, so that initiative tends to be given over into the hands of the sellers and to be taken away from the government. Clearly this will only tend to make it more difficult for the government to achieve whatever purpose it has in making the purchase.

The Announced Price Method

The announced price method operates in a very simple manner. The government merely announces that it will accept delivery of a limited or unlimited quantity of the commodity under consideration at a definite price. Specifications as to time, place and condition of delivery are usually included in the announcement.

It is clear that the public nature of the announcement makes it difficult for the existence of any great degree of price discrimination unless only a very small quantity of the commodity is involved. If the government offers to buy an indefinitely large quantity at the announced price, no discrimination at all is profitable to sellers unless it is done with a long range view of keeping up a market, for obviously it does not pay to sell something cheaply when it can just as easily be sold at a higher price. It is theoretically possible that sales to

---

are involved this is no longer the case. Here market price determination is similar to the case where government purchases are negotiated for delivery over a period of time. Cost will enter into market price determination, but the possibility of discrimination will still keep market price independent of government price. The precise relation in this case (provided buyers are atomistically competing, i.e., every buyer assumes that his actions have no effect on market price) is that price to private buyers is set at a level where marginal revenue from sales to private purchasers is equal to marginal cost of the total sales including sales to the government. From this it can be seen that the price paid by private buyers is in no way affected by the *price* paid by the government. Further, since price in the absence of government purchase would be fixed where marginal cost equals marginal revenue at the output sold to private purchasers, it can be seen that the government purchase may even make it profitable from the point of view of the seller to reduce price to private purchasers. This will be true in the case where marginal costs decrease with increasing output.

the government will be made at a price below that at which sales are being made to the market if there is a large unmarketable surplus and if market price more than covers marginal cost. However, it is difficult to visualise such circumstances in actual practice.

There is one practical exception to the rule that sales by the announced price method tend to eliminate discrimination. That is the case referred to above where a seller is concerned with a long range policy of maintaining his regular private market. In the first place, if the government's offer price is very high, he may continue to sell to a private buyer at a low price rather than have the private customer revert to substitutes. This is especially likely to be important where substitutes are imperfect in such a manner that a transition cost is involved in changing from the use of one to the other. Where this is the case a return to the earlier lower price (after cessation of government purchases) may be insufficient inducement to buyers to revert to the use of the product in question. The same thing may occur where supplies of the commodity in question are limited to an extent where sales to the government will mean curtailment of deliveries to other customers, and the announced government price is not very much higher than regular market price. Here it may pay completely to ignore the government's offer, even though it offers a price advantage, rather than force buyers to have recourse to substitutes, or to habituate themselves to doing without the commodity altogether.

In both these cases, however, if entry[1] into the selling field is at all possible, the announced price is likely to reduce the degree of discrimination[2] below what it would have been had the profit opportunity not been announced.

Having now got all these remarks and qualifications about price discrimination and the announced price method set down, I think it is fair enough to sum up by saying that this method tends to reduce price discrimination in the sense the term is being used here,[3] to a minimum. From this it is clear that the announced price method is one which can prove useful to a government which seeks to increase the price of one or more commodities. It is a simple and direct way for a government which is attempting to prevent the price of some commodity from falling below a certain level to achieve its objective, and this is actually the method which has primarily been employed by the United States Government in its price support programmes. By offering to buy all that will be offered for delivery at the price level the government decides to establish as the market price, the government can generally prevent market price from falling below the price it has decided is desirable.

---

[1] Note that entry into the field may be closed because there is insufficient time to make the necessary adjustments before the expiration of the government's offer.

[2] In order to extend our definition of degree of price discrimination to the case where the government's offer proves unsatisfactory, it is convenient to substitute the minimum government price offer acceptable to a seller for the price actually paid by the government in the expression D in note 1, page 3.

[3] Price discrimination of any sort may be discouraged by an announced government price offer, for it may give buyers some norm by which they can decide on a maximum price they are willing to pay, i.e., resistance to paying a price higher than the government's may be increased. On the other hand, any sales which would have been made at a price below the announced offer will, subject to the qualifications mentioned above, not be made if the government's offer is for the purchase of an unlimited quantity. Thus the range of deviation from the government's price will tend to be reduced by the announced price method and hence (by definition) all discrimination in the price of the good under consideration will be discouraged.

This can be useful in two cases. The first will occur where the government desires to guarantee at least a minimum level below which the income of some economic group shall not fall, or in any way to support the fortunes of that group (e.g., infant industry). In that case it is merely necessary to support the price of the commodity, or commodities, in whose sale or production the economic group is engaged.[1] The other opportunity for useful application of a price support programme which might be implemented by purchases under the announced price method may occur where a government is combating unemployment and where a rising price level is considered beneficial to increased employment.[2] Here the beneficial effects (from the point of view of the government's immediate purpose) of the rise in prices associated with the purchases, will be in addition to those resulting from the increase in purchasing power and any possible multiplier effect of the money spent. It should be noted, of course, that the increase in purchasing power and any consequent multiplier effect resulting from a purchase by the government, are not peculiar to the announced price method. They are involved in any government expenditure. It is only where rising prices are effective in increasing employment that a price support programme involving purchases by the announced price method is particularly advantageous.

The only other use of the announced price that occurs to me is the case where the government offers to purchase at a price below the market, hoping thereby to establish a norm for a maximum price acceptable to buyers, and thereby driving market price down to a level it considers desirable. This was actually attempted as a means of support of former price ceilings with the temporary expiration of price control in the United States in July 1946, the Government offering to buy indefinite quantities of grains at the former ceiling price. The situation was too confused by other factors and too short in duration to permit any appraisal of results.[3]

---

[1] In applying this method care must be taken to see that the pecuniary earnings of the poorer members of the economic group whose income it is desired to support are great enough for a reasonably large percentage rise in those earnings substantially to improve the welfare of these people. This was not the case in some of the farm price support programmes in the United States, with the result that some of the poorest farmers whose income was mostly in kind were largely unaffected by any increase in farm prices resulting from the programmes.

[2] This will be the case where the monetary effect is expected to be negative : cf. note 2, page 3.

[3] I believe there is little that can be said *a priori* about the effects of outright government requisition of items it may desire. As a result, I shall not comment on this subject here, leaving a discussion of this problem to the sociologists and to students of ethics.

II. VARIATION IN CONTRACTUAL SPECIFICATIONS: QUALITY SPECIFICATIONS

We have assumed until now that the commodity sought by the government was uniform, and that except for small tolerances, the specifications were definite and inflexible. The government may, however, be willing to accept several related types of the same product, not necessarily desiring each variant equally with every other. In this case, a premium may be offered for products that approach closer to what the government desires. This may take the form of a standard positive or negative premium above the transaction price, however the latter may be arrived at. If the government's desires adhere closely to the pattern of the market's scale of preferences, this modification by itself will have no effect on the market except to extend the effects already discussed to all the variants of the product included. The result in effect will be as if the government were buying several different products simultaneously. If, however, the government's scale of preferences for any reason departs from that prevailing on the market (as indicated by the relative market prices of the goods in question[1]) there will be some special effects.

First of all, it is clear that delivery to the government would tend to be confined to those items for which the government's valuation is higher than the market's. This will invariably be the case where no discrimination exists and where the items involved are close substitutes from the point of view of the market. Where discrimination is possible there may be exceptions to this. Large stocks of a particularly desired item, coupled with a government offer which covers marginal cost, may make it possible to sell the item at a price below that at which it is sold to private buyers. On the other hand, fear of losing a more permanent market may cause sellers to refrain from selling a scarce item to the government even at a price above that obtainable from other buyers.

Secondly, if there is sufficient time involved, production may also be affected by the government demand pattern. There will be some tendency for production to shift toward the type of product for which the government's valuation is higher than the market's since the total demand for these items is now relatively greater than in the absence of government procurement. Since presumably the items under consideration are substitutes from the point of view of the government, it is difficult to conceive of them being anything else but at least mild substitutes from the point of view of other buyers. If, in addition, the items are substitutes in production, there is little doubt that purchases by the government will cause the price of each of them to rise somewhat. This will necessarily be the case if the producers of the item are operating under conditions of atomistic competition and increasing costs. If, however, the items are complements in production, i.e., they are to some extent joint products, it is conceivable that output of items relatively less desired by the government will increase and that their price will subsequently fall. The latter is particularly likely where the items are only mild substitutes for the goods most desired by the government.

---

[1] Actually the entire range of production and indifference surfaces for every individual should somehow be used in considering the prevailing scale of preferences, but the prices of the goods under consideration constitute a basis for a practical first approximation.

The immediately foregoing, although it may possibly be of theoretical interest, seems, at least to me, to have no great practical importance. The only practical significance of specification flexibility aside from the fact that it makes it easier for the government to obtain relatively scarce items, results from the fact that it becomes easier for sellers to meet specifications so that more of them are able to deliver and many of them more cheaply than with inflexible specifications. The increased possibility of competition as well as the possibility of cheaper production of the desired items, may make them obtainable to the government at a lower price than would be possible under rigid specifications. This point is important to an economy-minded government and also to one opposed to concentration of industry, since flexibility of specifications often permits procurement from more sellers than in the contrary case, and thereby helps prevent the benefit of the government's business from accruing to only a few firms.

III. Specifications as to Quantity

It is possible for an agreement to be arrived at permitting variation in the quantity of goods to be delivered. The quantity may be set at the discretion of the seller or the government, or it may be based on some specific formula.

The first of these alternatives is the one most frequently employed in actual practice. It is, in effect, the indefinite quantity arrangement in which the government announces to the sellers that it is prepared to accept any quantity of the commodity that is delivered to it provided, of course, that specified conditions are met. Since this places the risk almost entirely on the government and so tends to increase the anxiety of sellers to take advantage of the government's offer, the result will be that sales price to the government will presumably be reduced by an amount no greater than the value of insurance against risk to sellers, although in practice the attractiveness of riskless selling may induce increased competition and force price down even further than an amount representing allowance for risk. A second aspect of indefinite quantity purchasing of this sort which we have already considered in discussing the announced price method, is that it helps put a floor under market price. With an offer by the government to purchase as much as will be offered at a given price, it is difficult to see how market price can long continue much below the level of the government's price offer.

Another market effect of this type of offer may be a reduction in the "normal backwardation", i.e., the reduction in futures prices corresponding to allowance for risk. Since futures operations appear to be predominantly employed by sellers rather than buyers as a mode of insurance against risk, prices on the futures markets tend to be *below* prices actually expected by an amount varying directly with market evaluation of risk. This premium to buyers is reduced with the reduction in risk resulting from the government's offer. This applies even to the period somewhat subsequent to the expiration of the offer, since it is unlikely that there will be any problem of redundant stocks and hence any selling difficulty developing immediately after this date.

Where the quantity to be purchased is at the discretion of the government, the price must be high enough to cover the seller's added risk. The only case where this sort of arrangement appears useful is where the quantity of the good needed is determined by factors unpredictable and beyond the control of the government. This method was recently employed by the United States in procuring war materials where the quantity of a good purchased depended on such factors as their efficiency in battle, their obsolescence (which in turn depended partly on the ingenuity of the enemy) and ultimately upon the duration of the war. As a result, special price arrangements such as the "cost plus" plans were instituted—plans whereby the government attempted to compensate the firms involved for the risk they undertook. In this instance allowance for risk was specifically treated as a distinct problem from the general one of price arrangement.

Finally, there is the possibility that the quantity to be purchased may be conditioned upon some objective standard. For example, the quantity to be purchased may be arranged to vary inversely with the market price at the time of delivery. This procedure is, of course, disadvantageous to the seller, requiring that he deliver large quantities only when prices are low, so that the success of such a plan might have to be conditioned on a high enough risk premium in the price paid by the government.

The chief reason for instituting this type of arrangement is that it can help to stabilise prices. By supplementing demand during low price periods and not doing so during high price periods, it is clear that price stability can be aided. The arrangement also permits cheap procurement by the government over a period of time, i.e., it implies rationality on the part of the government, provided any such benefits are not completely vitiated by an increase in risk payments to sellers.

Another application of an arrangement whereby government purchases vary with some predetermined independent variable, in this case output levels, is an "ever normal granary" plan whereby stocks would be built up in the fat years in order to provide for the lean.[1]

It may be that the purchase arrangement calls not for immediate delivery, but rather for delivery in the more or less distant future. In that case what has been stated about the effects on market prices applies strictly only to the relevant futures price. The present price may tend to be driven up to the present discounted value of the government's price, where the discounting is at the commodity rate rather than the money rate of interest.[2] For in the extreme case, if the government's offer is for an indefinite amount and the price more than compensates for storage charges, spoilage, risk and interest loss, it will clearly pay a seller to halt all current sales and save his supplies for delivery to the government at the time specified. If, on the other hand, the discounted value of the government's price is below current prices, the latter will be affected only in the remotely possible case that this causes future price expectations generally to be revised downward, with a consequent increase in current excess supply, which might result in some reduction in current price.

A purchase once completed need not be delivered all at once, and the actual deliveries can be spread over a considerable period of time. Where this is done it is likely that market price effects of the purchase will be considerably mitigated. For one thing, it is obvious that the preparation of the total offered for sale that will be delivered to the government at one time will be considerably reduced so that the depletion of the quantity available for sale on the open market will be reduced at any given time provided that the flow of goods into market is constant. Besides this, there is the time and opportunity given to adjust its capacity to the government's demand which again will tend to reduce the depletion of goods available for sale to private purchasers. Even if a lump sum purchase is arranged sufficiently in advance to permit adjustment of plant, it will not pay to expand the plant sufficiently to produce the entire quantity involved at one time; and only if the time involved is sufficiently great to permit the operation of a relatively small increment in plant to produce a significant part of the quantity demanded by the government by the time delivery is called for will it pay to carry out the expansion of capacity. This, of course, does not necessarily imply staggered delivery to the government, but since warehousing costs are here involved in the price to the government if deliveries do not correspond to staggered outputs, we can consider this equivalent to deliveries spread over time with the government doing its own warehousing.

---

[1] Actually the " ever normal granary " is a plan which achieved official favour in the U.S. Department of Agriculture in about 1934 under the sponsorship of Henry A. Wallace, then Secretary of Agriculture. It included provision for voluntary storage of grains to be financed by liberal crop loans in years of oversupply. In order to stabilise farm income and national grain supplies voluntary marketing quotas (subject to approval by a ⅔ vote of the farmers producing the commodities) were encouraged when supplies were judged excessive. " Orderly marketing agreements " were encouraged and surplus removal programmes such as the food stamp plan which, roughly, gave a percentage bonus to needy purchasers of commodities in excess supply, were established. Plans for adjustment of crops to changing demand conditions were included by suggesting acreage allocations and offering of bonuses to farmers who voluntarily adhered to these arrangements. Crop insurance provisions were also included in the programme, whereby farmers could assure themselves an income regardless of crop yield in any particular year. Finally, it should be pointed out that the entire programme was developed as an integral part of the conservation programme and, necessarily, there was never a clear line of demarcation between the two.

Cf. *Achieving a Balanced Agriculture*, issued September 1934 by the U.S. Department of Agriculture, Division of Special Reports, Office of Information (Revised April 1940).

[2] The commodity rate of interest is the percentage increase in the quantity of the commodity for future delivery necessary to make its total current value equal the value of the same quantity of the commodity delivered now. The rate of interest is obviously a special case of this general definition. Cf. Hicks, *ibid.*, p. 142, for a complete analysis.

From the foregoing it seems reasonable that a government seeking to influence the market price structure without affecting the capacity of the industry involved, should not stagger its purchases.

On the other hand, if procurement is desired cheaply and with a view to keeping repercussions on the rest of the economy at a minimum, deliveries should, wherever possible, be planned to extend over a period of time. This will probably involve a lower price to the government as well as to other purchasers for a similar reason, including the fact that any increase in output resulting from adjustments in capacity will mean that the opportunity cost of supplying the desired quantity to the government will tend to decrease correspondingly. Of course, if the good desired is actually needed all at once perishability or lack of warehousing space may prevent the application of such a plan, but subject to these limitations it would seem that staggered delivery should be generally employed by a financially prudent government.

There is some leeway possible in pricing specifications. Usually indefinite pricing arrangements are employed as a means of shifting risk one way or the other. The "cost plus" arrangements whereby the government undertakes to reimburse suppliers for cost of production of the item and, in addition, to guarantee some predetermined profit or rate of profit, has already been mentioned as a means of reducing sellers' risk. Unfortunately, this type of agreement can often be an inducement to inefficiency in production, especially where profit is to be proportioned to total quantity delivered. In effect the situation is one where marginal cost is always necessarily below marginal revenue to the firm. Aside from the fact that such a system of procurement may be quite expensive to the government, it is quite wasteful from the point of view of the economy. Under such an arrangement it would pay a producer to hire skilled manpower from other fields, even at high salaries, for even the most menial tasks in his plant. Other factors can similarly be misemployed to the profit of the seller. For this reason it is only on rare occasions that a government can afford the luxury of a "cost plus" arrangement. It was only the pressure of military need that forced recourse to it in the recent past as a means of inducing investment for use over a period whose length no one could successfully predict, and which might well have been insufficient to provide financial justification for the investment in ordinary times.

An alternative to the " cost plus " method which may eliminate some of its drawbacks is an arrangement whereby payments to sellers are somehow related to market price of raw materials and factors of production employed in making the item. This serves to reduce sellers' risk, although not quite as completely as the " cost plus " method, but it does not place the cost of inefficiency upon the government. In addition, should the quantity to be delivered be at the discretion of the government, it becomes easy, with this arrangement, to take advantage of any periods of abnormally low cost. If cost is taken to include opportunity cost, so that the market price of the item is reflected in this cost figure, this method may help to dampen seasonal and other fluctuations and thereby stabilise the market.

In all of these risk-reducing arrangements it is possible that a maximum or minimum price or both will be specified. The effectiveness of the arrangement as guarantee against sellers' risk will obviously be less, the lower the maximum and minimum prices established.

It is also possible to make an arrangement whereby unit delivery price is made to depend on quantity delivered. This may permit the government to defray cost of the expansion of plant necessary to supply it, regardless of whether this plant is used to capacity. This is, however, a rather roundabout method of achieving the desired end. It may also represent an attempt at " rationality " on the part of the government where quantity is at its discretion and the price paid represents exactly the amount necessary to induce the sale of the given quantity. Abstractly, this should be an economical method of procurement, but I doubt whether actual practice permits of such refinement. It may be that such a plan can be effectively applied in dealing with some of the larger firms whose costs, markets, etc., are carefully analysed, but in general it seems unsafe to assume as definite a supply curve for the firm as seems to be implied by this type of arrangement.

Having considered the basic types of procurement arrangements which the government can make, it is clear that there is no abstractly ideal method of procurement. The details most desirable for any particular transaction depend on the government's motivation. For this reason a high degree of judgment and flexibility, neither of which is always easily compatible with a bureaucracy, are necessary in order for the government to get the most out of its procurement transactions.

However, while no hard and fast rules about a best method of procurement are possible, some general principles can be laid down. This is what I have attempted to do in this paper. But even with these principles in mind, considerable knowledge and discretion are required in actual practice. For example, the question of whether a rising or a falling price level is better for employment in any specific situation is indeed a pretty problem which can neither be solved readily nor perhaps even categorically. Yet a decision of this sort is necessary before some of the earlier observations of this paper can be applied.

Further, no set of principles can ever replace the bargaining skill and shrewdness necessary to obtain concessions from interested parties.

What this analysis can accomplish, then, is the service of a guide whereby the rationality of purchasing procedure can be scrutinized in the light of circumstances and the desires of the government.

Sir James Steuart's General Theory of Employment, Interest and Money

By Samar Ranjan Sen

While rummaging through the old papers of the East India Company at the India Office, I came across some very interesting correspondence between Sir James Steuart and certain important officials of the Company. These letters, which deal with the problem of currency in Bengal, should be interesting to any student of monetary history, but they were of special interest to me because Sir James Steuart was the first of the long series of British economists who have been called upon from time to time to advise upon the economic problems of India. I intend to deal with these letters more fully elsewhere in the background of the monetary history of the period. But some of Sir James' ideas appear to me to have so much resemblance to some modern theories and yet he has always been such a neglected author that as a first step I feel it necessary to acquaint the modern reader, whose knowledge about this illustrious Scotsman goes little beyond that he was one of the first to use the term " Political Economy ", with some of his ideas on money and banking.

It is, indeed, strange that this pioneer, who published his treatise nine years before Adam Smith's and in some respects may be said to have provoked the latter to write his *Wealth of Nations* by way of a reply, has not received more than a passing reference from any of the important British writers on the history of economic thought. And even the few German and American writers like Hufeland, Herrenschwand, Rehberg, Roscher, Feilbogen, Stangeland, Monroe and Johnson who have written about him have merely tried to evaluate him in the light of Smithsian doctrines and have almost completely failed to appreciate the true significance of his economic, especially monetary, ideas, which were on an absolutely different plane. The most surprising thing, however, is that even Lord Keynes, whose monetary ideas have some resemblance to Steuart's, should fail to mention him, although he rakes up from oblivion a fairly large number of earlier writers who professed views similar to his.

While there is much chaff among the grains of Steuart's writings, and this is only to be expected in a pioneer writing in the sixties of the eighteenth century, his work cannot but be considered a classic of deductive analysis combined with inductive study.

Steuart's ideas on money and banking are developed in his three books :

(1) *A Dissertation upon the Doctrine and Principles of Money applied to the German Coin.* (1761.)

(2) *An Inquiry into the Principles of Political Oeconomy.* (1767.) and

(3) *The Principles of Money applied to the Present State of the Coin of Bengal.* (1772.)

It is, however, the second in which these ideas are fully developed. Unlike Adam Smith and Ricardo, by whom he has been completely overshadowed, primarily because he had the misfortune to be out of tune with the Zeitgeist of his period, his economic theory was a general theory of employment, interest and money. To him, at least, money was not a mere " veil " and he sought to study it as an integral part of a dynamic economic system. If Adam Smith is the father of Economic Cartesianism, Steuart must get the credit of being a pioneer theoretician of Economic Planning.

The object of political economy, according to Steuart, is " to provide food, other necessaries and employment, not only for those who actually exist, but also for those who are to be brought into existence ",[1] the ultimate target being to secure the largest amount of well-being consistent with group vigour[2]; and it is the responsibility of the " statesman " (in modern parlance the government) to ensure this. The statesman, however, is not omnipotent. There are certain natural forces active in the body politic potent for both good and evil, and all that the statesman may do is so to canalise and employ them that good effects are maximised and evil ones minimised. For example, " self-interest is the ruling principle "[3] and usually " it is the combination of every private interest which forms the public good "[4] but it has also important limitations. The duty of the statesman is neither to ignore it nor to give it a free scope but to canalise it and control it in such a way that only beneficial results are obtained.

The statesman's task, moreover, is complicated by the fact that these fundamental forces may tend to have different effects under different circumstances and so a policy which is commendable in an advanced society may be quite unsuitable for a primitive community. Steuart, therefore, takes good care to distinguish between problems of an economy based on slavery from those of a free society and problems which confront a group of nations at widely differing stages of economic development from those which face a group of nations which are at more or less the same stage.

Starting with the proposition that the growth of population is limited by the food supply, Steuart distinguishes between three different stages of development. The first stage was when man was unaware that food supply did not depend entirely on the bounty of nature but could be also augmented by human effort. At that stage the growth of population was absolutely limited by the bounty of nature. "The earth's spontaneous fruits being of a determined quantity, never can feed above a determined number".[1] But with an increasing pressure of population prompted by his "generative faculty",[2] man soon made the important discovery that "labour is a method of augmenting the production of nature, and in proportion to the augmentation, number may increase."[3] But the problem was how to make the individual work hard. There were two possible solutions. One was compulsion, the method of slavery, which was the second stage. The other was inducement, the method of popularising luxuries and encouraging exchange, which was the third stage. It was at this third stage[4] that a "free society" came into being. Steuart's idea is that normally the primitive man would not work, unless forced, to produce anything beyond his barest necessities; but once his taste for luxuries developed, he became willing to work hard to produce a surplus with which to procure luxuries. Henceforward one set of men, the "farmers", concentrated on producing a surplus of foodstuff and another set, the "free hands", on producing a surplus of luxuries. The more population increased, the greater was the need for foodstuff. But this extra foodstuff would not be produced unless there was an "effectual demand" for it. More people, therefore, now concentrated on producing luxuries for procuring the wherewithal with which to pay for food. And the more luxuries were produced, and popularised, the greater was the inducement for the farmers to produce a surplus of food and so on cumulatively. "Multiplication is", thus, "the efficient cause of agriculture"[5] while "trade, industry, and manufacture, only tend to multiply the numbers of men by encouraging agriculture."[6]

---

[1] Steuart: *Principles of Political Oeconomy*, Vol. I, p. 149.

[2] *Ibid.*, p. 70.

[3] *Ibid.*, p. 163.

[4] *Ibid.*, p. 164.

Since this whole process depended on exchange, the rôle of money was very important indeed. Steuart points out that, "if the country . . . be supposed of a considerable extent and fruitfulness, and if the inhabitants have a turn for industry; in a short time, luxury and the use of money (or of something participating of the nature of money) will infallibly be introduced"[7] and goes on to define money as "any commodity, which purely in itself is of no material use to man . . . but which acquires such an estimation from his opinion of it, as to become the universal measure of what is called value, and an adequate equivalent for anything alienable".[8] Money not only facilitated the process of exchange (or "alienation") but also became very soon a vital element when for all practical purposes it came to be the principal channel of expression in the market of the effective demand for food as well as luxuries, for the labour of the "farmers" as well as of "free hands". "When once this imaginary wealth, money, becomes well introduced into a country, luxury will very naturally follow; and when money becomes the object of our wants, mankind become industrious."[1] For "as the ingenuity of workmen begets a taste in the rich, so the allurement of riches kindles an ambition, and encourages an application to works of ingenuity in the poor."[2] Moreover, "every transition of money from hand to hand, for a valuable consideration, implies some service done, something wrought by man, or performed by his ingenuity, or some consumption of something produced by his labour. The quicker, therefore, the circulation of money in any country, the more strongly it may be inferred, that the inhabitants are industrious; and *vice versa*".[3]

---

[1] Steuart: *Principles of Political Oeconomy*, Vol. I, p. 150.

[2] *Ibid.*, p. 20.

[3] *Ibid.*, p. 150.

[4] It should be noted that Steuart merely considers these two stages to be possible alternatives and does not trace any historical relation.

[5] *Ibid.*, p. 115.

[6] *Ibid.*, p. 39.

[7] *Ibid.*, p. 31. (Introduction of luxury leads to the use of money because "when wants are multiplied, bartering becomes more difficult; upon this money is introduced". Vol. I, p. 177.)

[8] *Ibid.*, p. 32.

Here then is the key to Steuart's theory of employment and money. To Adam Smith and his disciples employment was no real problem but to Steuart it was a great preoccupation. "A statesman", he says, "should make it his endeavour to employ as many of every class as possible, and when employment fails in the common run of affairs, to contrive new outlets for young people of every denomination."[4] And he points out that "riches are calculated . . . for the encouragement of industry . . . circulation is to be accelerated by every method, in order to give bread to those who are disposed to work."[5]

This realisation of the vital rôle which money plays in the economic system led Steuart to develop his theory of money with the greatest care.

He begins his discussion of money by a vigorous refutation of the old mercantilist idea that money and coin are synonymous and that the value of the metals gives value to the money. He points out that money, being essentially the measure of value, is an abstract concept and "cannot be fixed to any particular quantity of gold, silver or any other commodity whatsoever."[6]

Steuart has very clear-cut ideas about the function of money. According to him the value of things depends "upon the general combination of many circumstances, which however may be reduced to four principal heads:

1mo. The abundance of things to be valued.
2do. The demand which mankind make for them.
3tio. The competition between demanders; and
4to. The extent of the faculties of the demanders.

---

[1] Steuart: *Principles of Political Oeconomy*, Vol. I, p. 33.
[2] *Ibid.*, p. 34.
[3] *Ibid.*, p. 34 *n.*
[4] *Ibid.*, p. 65.
[5] *Ibid.*, p. 62.
[6] *Ibid.*, p. 527.

The function, therefore, of money is to publish and make known the value of things, as it is regulated by the combination of all these circumstances."[1]

He is very critical of the simple quantity theory of money as formulated by Hume and Montesquieu and considers it as one of those " general and superficial maxims which never fail to lead to error ".[2] He does not believe that any variation in the quantity of money has any direct effect on the general level of prices except through particular prices and observes that " it is the complicated operation of demand and competition, which determines the standard price of everything. If the increase of riches, therefore, have the effect of raising demand, work will increase in its value, because there competition is implied; but if it has only the effect of augmenting demand, prices will stand as formerly. What then will become of the additional quantity of coin, or paper money? I answer, that in both cases it will enter into circulation in proportion to the *rise* or *augmentation* of demand; with this difference, that in the first case, it will have the effect of raising prices; because the supply is not supposed to augment in proportion: in the second, prices will stand as they were; because the supply is supposed to augment in proportion. These are the consequences of the augmentation of wealth, when it has the effect of either raising or augmenting demand. But if upon this revolution it be found that the state of demand remains without any variation, then *the additional coin* will probably be locked up, or converted into plate. . . . . As for the paper money, so soon as it has served the first purpose of supplying the demand of him who borrowed it (because he had at that time no coin) it will return upon the debtor in it, and become realised, because of the little use found for it in carrying on circulation."[3]

It should be noted here that by paper money Steuart always understood credit and never irredeemable paper currency and, therefore, he was never concerned about inflation, especially galloping inflation, although depreciation of the currency was quite a serious problem with him. His real concern, however, was deflation resulting from a shortage of coins.

Elaborating his point of view, he continues, " Suppose a country where prices are determined, and where specie is sufficient for the circulation: is it not plain, that if this country has a communication with other nations, there must be a proportion between the prices of many kinds of merchandise, there and elsewhere, and that the sudden augmentation or diminution of the specie, supposing it could *of itself* operate the effects of raising or sinking prices, would be restrained in its operation by foreign competition? But let us suppose it cut off from every communication whatsoever, which seems the only case where this theory can operate with any appearance of justness, will anybody pretend that the frugal or extravagant turn of the inhabitants will have no influence upon prices, and will it be asserted that no variation in the spirit of a people, as to frugality and dissipation, can take place except upon a variation in the quantity of their gold and silver ? "[1]

---

[1] Steuart: *Principles of Political Oeconomy*, Vol. I, p. 527.

[2] *Ibid.*, p. 399.

[3] *Ibid.*, p. 400.

" We must . . . adopt the other principle, and follow the proportions of demand and competition ; and then we shall find that if the sellers want to raise their price up to the proportion of the specie, all demand will cease, as effectually as if it had never been made ; and the sellers will afterwards be obliged to accept of such a moderate augmentation as shall be in proportion *to the urgency of the demand*, but never in proportion *to the money* ready to be employed.

" The circulation of every country . . . must ever be *in proportion to the industry of the inhabitants*, producing the commodities which *come to market* : whatever part of these commodities is consumed by the very people who produce them, enters not into circulation, nor does it in anywise affect prices. If the coin of a country, therefore, falls below the *proportion* of the produce of industry *offered to sale*, industry itself will come to a stop ; or invention, such as symbolical money, will be fallen upon to provide an equivalent for it. But if the specie be found above the proportion of the industry, it will have no effect in raising prices, nor will it enter into circulation : it will be hoarded up in treasures, where it must wait not only the call of a desire in the proprietors to consume, but of the industrious to satisfy this call."[2]

He concludes, " As far . . . as an increase of the metals and coin shall produce an increase of demand, and a greater competition than before, so far will that circumstance influence the rise of prices, and no further.

" The value of commodities, therefore, depending upon a general combination of circumstances relative to themselves and to the fancies of men, their value ought to be considered as changing only with respect to one another, consequently, anything which troubles or perplexes the ascertaining those changes of proportion by the means of a general, determinate and invariable scale, must be hurtful to trade and a clog upon circulation. This trouble and perplexity is the infallible consequence of every vice in the policy of money or of coins ".[3]

Of the two varieties of money, coins and paper money, Steuart considers the latter to be the ideal and seems to desire almost wistfully that there were only paper money in circulation and no coins. His main objection to coins is that these being at the same time " money and merchandise " lead to serious complications. Nevertheless he recognises that coins have evolved as a matter of historical necessity and have come to stay. He therefore proceeds to discuss various problems connected with metallic currency.

---

[1] Steuart : *Principles of Political Oeconomy*, p. 401.

[2] *Ibid.*, p. 407.

[3] *Ibid.*, p. 528.

He points out how " from the infancy of the world " the precious metals have been used by man to serve as money on account of certain obvious advantages which they possess. But in so far as this practice has led men to confuse metals and coins for money it has been the source of great inconvenience and abuse. Money, like any other unit of measurement, must be invariable. But the value of the precious metals, like that of any other commodity, varies constantly, firstly with regard one to another, and secondly with regard to other commodities. Moreover, metallic money is subject to factors like wear and tear, coinage and seignorage, clipping, washing, debasement, etc. Every coin thus comes to have two values, one as money and another as metal and divergences between the two lead to a host of evil effects.

Steuart explains how various " inconveniences from the variation in the relative value of the metals to one another " (like the operation of the Gresham's law) may originate and in this connection he anticipates for all practical purposes Marshall's idea of Symmetalism :

" Were mankind all philosophers, I should propose to mix the gold and the silver together in the same mass, according to the market proportion of the metals, and to make the coin out of this mixture. I am not so extravagant as to propose so great an innovation. I throw it out merely as a hint, which may cast light upon this subject."[1]

The other set of inconveniences which follow from variations in the value of the money unit itself caused by changes in the market price of metals vis-à-vis other commodities or by wear and tear, imposition of coinage, debasement, etc., is also no less serious. For, " every variation . . . upon the intrinsic value of the money-unit has the effect of benefiting the class of creditors, at the expense of debtors or *vice versa* ".[2]

The greatest disadvantage of metallic money, however, is that the quantity of money in the country depends on the quantity of gold and silver in it. But there should always be " a just proportion between the produce of industry and the quantity of the circulating medium (money) in the hands of . . . . subjects for the purchase of it." If money is insufficient, industry will stagnate and this is only paralleled by the fact that if industry weakens the whole mechanism of circulation will be imperilled.

Steuart is aware that by the imposition of coinage and seignorage some of the disadvantages of metallic currency (in so far as these follow from coins being commodity money instead of token money) might be corrected to a limited extent but he points out at the same time that greater disadvantages in other directions may result unless there is restraint and uniformity with regard to the imposition of coinage by different nations. Moreover, the margin of flexibility which coinage allows is necessarily too narrow for the elastic money policy which Steuart apparently has in mind.

---

[1] Steuart : *Coin of Bengal*, p. 10.

[2] Steuart : *Principles of Political Oeconomy*, Vol. I, p. 554.

Both because Steuart believed that the true character of money as an invariable measure of value could not be emphasised otherwise, and because he could not find any rational relation between the quantity of gold and silver available and the quantity of money necessary, he was a strong advocate of paper money.

The paper money of his conception is, however, neither full-fledged fiat money nor fully backed gold or silver certificate. It is something like a cross between a " Rentenmark " and a modern convertible bank note. His idea is that notes should be issued by banks against the security of land and other real property but these should be also convertible into coins or bullion on demand. He would make all notes properly secured and issued by well regulated banks full legal tender and would allow their redemption in bullion or coins primarily for foreign payments. If possible he would have only paper money for domestic circulation.

The fundamental basis of this convertible paper money being credit, Steuart next proceeds to examine in some detail the theory of interest, which is " an essential requisite " of credit, and banking, which is " the great engine calculated for carrying it on ".[1]

Starting with the proposition that fundamentally " credit is the reasonable expectation entertained by him who fulfils his side of any contract, that the other contracting party will reciprocally make good his engagements ",[2] Steuart goes on to explain that " confidence . . . is the soul and essence of credit[3] ", that " this confidence must have for its object a *willingness* and a *capacity* in the debtor to fulfil his obligations ",[3] that by usage credit has now come to be associated with " the obligation to pay money, either for value received, or for some consideration relative to the parties, which may be the just ground of a contract. Credit and debts are therefore inseparable,"[4] and that now-a-days " no money is ever locked up ; and the regular payment of interest for it, when borrowed, is as essential to the obtaining of credit as the confidence of being repaid the capital ".[4]

" Interest ", he notes, " is now become so absolutely essential to credit that it may be considered as the principal requisite and basis on which the whole fabric stands."[5]

But what is it that determines this rate of interest ? His answer is " that at all times there is in every state a certain number of persons who have occasion to borrow money, and a certain number of persons who desire to lend: there is also a certain sum of money demanded by the borrowers and a certain sum offered to be lent. The borrowers desire to fix the interest as *low* as they can; the lenders seek, from a like principle of self-interest, to carry the rate of it as high as they can.

---

[1] *Principles of Political Oeconomy*, Vol. II, p. 141.

[2] *Ibid.*, p. 105.

[3] *Ibid.*, p. 108.

[4] *Ibid.*, p. 109.

[5] *Ibid.*, p. 112.

" From this combination of interests arises a double competition which fluctuates between the two parties. If more is demanded to be borrowed than there is found to be lent, the competition will take place among the borrowers. Such among them who have the most pressing occasion for money will offer the highest interest and will be preferred. If, on the contrary, the money to be lent exceeds the demand of the borrowers, the competition will be upon the other side. Such of the lenders who have most pressing occasion to draw an interest for their money will offer it at the lowest interest, and this offer will be accepted of."[1]

Now as in the case of commodities so also in the case of money, this " double competition " would fix the ultimate price. But " the price of commodities is extremely fluctuating: they are all calculated for particular uses: money serves every purpose. Commodities, though of the same kind, differ in goodness: money is all, or *ought to be* all, of the same value relative to its denominations. Hence the *price of money* (which is what we express by the term *interest*) is susceptible of a far greater stability and uniformity than the price of any other thing."[2]

Now there are two classes of borrowers: (1) " who borrow *in order to profit* by the loan ", and (2) " who borrow *in order to dissipate* ". " The first class never can offer an interest which exceeds the proportion of their gains: the second class, finding nothing but want of credit to limit their expense, become a prey to usurers. Were it not then upon account of these last there would be no occasion for a statute to regulate the rate of interest. The profits on trade would strike an average among the industrious classes; and that average would fall and rise in proportion to the flourishing or decay of commerce."[3]

Now if the class who borrow to dissipate be " found so to preponderate as to require more money to borrow than all that is to be lent, the consequence would be to prevent the borrowing of merchants; to raise interest so high as to extinguish trade; and to destroy industry."[3]

There may be, therefore, cases where the rate of interest requires to be regulated. For Steuart is firmly convinced that " low interest is the soul of trade ", although he is careful to note that " the terms *high* and *low* are constantly relative ".[4]

---

[1] *Principles of Political Oeconomy*, Vol. II, p. 115.
[2] *Ibid.*, p. 116.
[3] *Ibid.*, p. 118.
[4] *Ibid.*, p. 129.

" Since it is agreed on all hands ", he observes, " that low interest is the soul of trade and the firmest basis of public credit; that it rises in proportion to the demand of borrowers, and sinks in proportion as money is made to regorge in the hands of the monied interest; the statesman should set out by such steps of administration as will discourage borrowing, in those who employ their money in prodigality and dissipation, as far as may be consistent with the interest of the lower classes employed in supplying home consumption. . . . He should abstain from borrowing himself and even from creating new outlets for money, except from the most cogent motives. By this he will, in a short time, gently reduce the rate of interest. Then by statute he may bring it down a little, but not so very low as the foregoing operations may have reduced; contenting himself with having further restricted the extent of the ordinary fluctuations ".[1] Although he points out these possible methods, Steuart is aware that " many . . . inconveniences *might* manifest themselves, were government to force down the value of money, contrary to the ordinary operations of demand and competition "[2] and points out how in a trading nation " without any such expedient the same end may be compassed ".[2]

For example, " if money can be made of paper . . . a statesman has it in his power to increase or diminish the extent of credit and paper money in circulation by various expedients, which greatly influence the rate of interest ",[3] for " interest falls in proportion to the redundancy of money to be lent ".[4]

Moreover, if paper money can be issued against landed property, " the money'd interest alone would borrow among themselves for the purposes of trade (for money'd men do not borrow to squander) and landed men would consequently pay with their own paper, in every case, where now they borrow in order to pay. Thus interest would be regulated by the demands of trade, and the rate of it would not be disturbed by the competition of spendthrifts ".[5]

" Another cause of high interest proceeds from certain clogs laid upon circulation, which proceed merely from custom and prejudice. Of this nature is the obligation of debtors to pay in the metals, nothing but coin being a legal tender ".[6] So Steuart suggests that " all the circulating paper in a nation secured by law " should be made " legal tender in all payments ".[6]

Incidentally Steuart points out two important facts about interest.

(1) Although low interest is a great advantage to trade, " it is not the barometer of it ". It should not be concluded that because the rate

---

[1] *Principles of Political Oeconomy*, Vol. II, p. 124.
[2] *Ibid.*, p. 128.
[3] *Ibid.*, p. 130.
[4] *Ibid.*, p. 131.
[5] *Ibid.*, p. 132.
[6] *Ibid.*, p. 134.

of interest is lower in a country compared to another it necessarily follows that the former is more prosperous in so far as trade is concerned.

(2) The rate of interest tends to fall in proportion as wealth increases: " providing it be supposed that dissipation (or in modern parlance propensity to consume) does not increase in proportion to the wealth ".[1]

It should be noted that Steuart has completely neglected the theory of capital and his theory of interest is a purely monetary theory.

He develops his ideas about interest and credit into a very detailed discussion of the principles of banking.

" Banking, in the age we live in, is that branch of credit which best deserves the attention of a statesman. Upon the right establishment of banks depends the prosperity of trade and the equable course of circulation. By them *solid property* may be melted down. By the means of banks, money may be constantly kept at a due proportion to alienation. If alienation increases, more property may be melted down. If it diminishes, the quantity of money stagnating will be absorbed by the bank and part of the property formerly melted down in the securities granted to them will be, as it were, consolidated anew. These must pay for the country the balance of their trade with foreign nations. These keep the mints at work; and it is by their means, principally, that private mercantile and public credit is supported ".[2]

Steuart classifies banks into two main types:

" Banks either circulate notes or transfer credit written in their books: the first are called banks of circulation; the latter banks of deposit.

" All banks are founded on credit, and according to the nature of their institution I may divide the credit they are built on into three kinds, viz., private, mercantile and public.

" Private credit is when the ground of confidence is real property, pledged for the security of the loan.

" Mercantile credit is when the cause of confidence is in the trading stock, abilities, integrity and good fortune of the person who obtains it.

" Public credit everyone understands. It is when the grounds of confidence is a fund secured by public faith, in favour of the creditors, for the interest and capital due, which last, however, is never exigible from the state.

" Private credit is the most solid of the three; mercantile credit is the most precarious; and public credit depends entirely upon the maxims of every government with regard to public faith ".[3]

---

[1] *Principles of Political Oeconomy*, Vol. II, p. 139. (Comment in parentheses ours.)

[2] *Ibid.*, p. 149.

[3] *Ibid.*, pp. 599–600.

Steuart's description, *inter alia*, as to how a bank of circulation upon private credit or mortgage may be constituted, is interesting:

"A number of men of property join together in a contract of banking, either ratified or not by public authority, according to circumstances. For this purpose they form a stock which may consist indifferently of any species of property. This fund is engaged to all the creditors of the company as a security for the notes they propose to issue. So soon as confidence is established with the public they grant credits, or cash accompts, upon good security; concerning which they make the proper regulations. In proportion to the notes issued in consequence of these credits, they provide a sum of coin, such as they judge to be sufficient to answer such notes as shall return upon them for payment. Nothing but experience can enable them to determine the proportion between the coin to be kept in their coffers and the paper in circulation. This proportion even varies according to circumstances . . ."[1]

"When paper is issued for no value received the security of such paper stands alone upon the original capital of the bank, whereas when it is issued for value received, that value is the security on which it immediately stands, and the bank stock is, properly speaking, only subsidiary".[2]

". . . the solidity of a bank which lends upon private security does not so much depend upon the extent of their original capital as upon the regulations they observe in granting credit."[3]

The obligation, however, to pay off their notes in metallic coins, if demanded, usually obliges the banks to keep some till money, which not only limits the power of the banks to extend credit but also makes them liable to certain difficulties.

The most serious of these difficulties arise when there is an adverse balance of payments or what Steuart calls a "*Grand balance*" and foreigners have to be paid in coins which ultimately must affect the till money of the banks.

". . . . it is plain that no coin is ever (except in very particular cases) carried to a bank in order to procure notes. The greatest part of notes issue from the banks, of which we are treating, either in consequence of a loan or of a credit given by the bank to such as can give security for them. The loan is made in their own notes; which are quickly thrown back into circulation by the borrower; who borrowed because he had occasion to pay them away. In like manner, when a credit is given the bank pays (in her notes) the orders she receives from the person who has the credit: in this manner are notes commonly issued from a bank.

"Coin, again, comes to a bank, in the common course of circulation, by payments made to it, either for the interest upon their loans or

[1] *Principles of Political Oeconomy*, Vol. II, p. 100.

[2] *Ibid.*, p. 131.

[3] *Ibid.*, p. 133.

when merchants and landed men throw the payments made to them into the bank, towards filling up their credits; and by way of a safe deposit for their money. These payments are made to the bank in the ordinary circulation of the country. When there is a considerable proportion of coin in circulation, then the bank receives much coin; and when there is little, they receive little. Whatever they receive is laid by to answer notes which are offered for payment; but whenever a draught is made upon them for the money thrown in as above, they pay in paper . . .

" . . . . experience has evinced that whenever any mistrust has occasioned any run upon the bank for any continuance, and the people not finding the treasure so soon exhausted as they surmised, it flowed again faster on the one hand than it was drawn out on the other . . . .

" But the consequence of the obligation to pay in coin is that when the nation comes to owe a balance, the notes which the bank had issued to support domestic circulation only, come upon it for payment of a foreign balance; and thereby the coin which it had provided for home demand only is drawn out.

" It is this circumstance, above all others, which distresses banks of circulation. Were it not for this, the obligation to pay in coin might easily be discharged; but when in virtue of this pure obligation a heavy national balance is demanded of the bank, which has only made provision for the current and ordinary demand at home, it requires a little combination to find out, at once, an easy remedy."[1]

Steuart takes considerable pains to prove how the burden of paying the *grand balance* is ultimately shifted from individuals to the banks, " while they have a note in circulation ", and points out that any attempt on the part of the banks to reduce the volume of *grand balance* by restricting credit is likely to be frustrated and to harm their own interest as well as that of the nation in the long run.

" Did all the circulation of a country consist in coin ", the *grand balance* " would be paid out of the coin, to the diminution of it ".[2]

Now, " the creation of symbolical money adds no additional wealth to a country, but only provides a fund of circulation out of solid property ".

Thus, " as nations who have coin pay their *grand balance* out of their coin to the diminution of that species of their property, so nations who have melted down their solid property into symbolical money must pay their *grand balance* out of the symbolical money; that is to say out of the solid property of which it is the symbol ".

---

[1] *Principles of Political Oeconomy*, Vol. II, pp. 157–60.

[2] *Ibid.*, p. 162.

" But this solid property cannot be sent abroad ", so " in such a case the credit of a bank may step in ".

" While exchangers transact the balance, the whole load of providing coin lies upon the banks. Now the whole solid property melted down, in their paper, is in their hands. . . . . . Upon this property there is a yearly interest paid to the bank : this interest, then, must be engaged by them to foreigners, in lieu of what is owing to them by the nation ; and when once a fund is borrowed upon it abroad the rest is easy to the banks ".[1]

For, " either the *grand balance* must be paid out of the national stock of coin ; or it must be furnished by foreigners upon a loan from them ; the interest of which must be paid out of that part of the solid property of the nation which has been melted down into paper . . . . . Were not all this solid property, so melted down, in the hands of banks who thereby have established to themselves an enormous *mercantile* credit ; there would be no possibility of conducting such an operation ".[2]

Steuart's explanation of how a favourable or unfavourable balance of trade tends to affect domestic circulation is interesting.

Suppose, " (A) is the total mass of money (coin and paper) necessary at home : (A) is composed of (B) the coin, and of (C) the paper, and (D) stands for that mass of coin, or metal, or bills, which goes and comes according as the *grand balance* is favourable or unfavourable with other nations ".[3]

In that case " when a favourable balance of trade brings exchange below par, and brings coin into the country, the consequence is either to animate trade and industry, to augment the mass of payments, to swell (A), and still to preserve (C) in circulation ; or to make (A) regorge, so as to sink the interest of money below the bank lending price ; and the people will carry back the regorging part of (C) to the bank and withdraw their securities ; which is consolidating, as we have called it, the property which had been formerly melted down for want of this circulating equivalent (money).

" This is constantly the consequence of a stagnation of paper, from an overcharge of it, thrown into circulation. It returns upon the bank and diminishes the mass of their securities, but never that of their coin.

" From this we may conclude that the circulation of a country can only absorb a determinate quantity of money (coin and paper) ; and that the less use they make of coin the more use they will make of paper and *vice versa*.

" We may also conclude that when trade and alienation increase, *caeteris paribus*, so will money ; that is, more solid property will be melted down ; and when trade and alienation diminish, *caeteris*

---

[1] *Principles of Political Oeconomy*, Vol. II, p. 163.
[2] *Ibid.*, p. 164.
[3] *Ibid.*, p. 170.

paribus, so will money; that is, some of the solid property formerly melted down will consolidate, as we have called it."[1]

Again, when the balance of trade is unfavourable, " . . . . the bank must possess, or be able to command, a sum of coin or bills equal to (B) and (D); (B) for domestic, and (D) for foreign circulation.

"Those who owe this balance (D), and who are supposed to have value for it, in the currency of the country, in order to pay it, must either exhaust a part of (B), by sending it away, or they must carry a part of (C) to the bank, to be paid for in coin. If they pick up a part of (B) in the country, then the coin in circulation, being diminished below its proportion, the possessors of (C) will come upon the bank for a supply, in order to make up (B) to its former standard. Banks complain without reason. If they carry part of (C) to be changed at the bank, for the payment of (D), they thereby diminish the quantity of (C); consequently there will be a demand upon the bank for more notes to support domestic circulation; because those which have been paid in coin are returned to the bank and have diminished the mass of (C); which therefore must be replaced by a new melting down of solid property.

"Now I must here observe that this recruit, issued to fill up (C) to the level, is an addition made to the mass of securities formerly lodged with the bank; and represents, not improperly, that part of the landed property of a country which the bank must dispose of to foreigners in order to procure from them the coin or bills necessary for answering the demand of (D)."[2]

Thus, "when a nation can pay with its coin, or with its effects (that is to say with its products and manufactures), the operation" of paying the *grand balance* "is easily and mechanically performed by the means of trade: when these objects are not sufficient; or when land, or an annual and perpetual income out of it, must make up the deficiency; then more skill and expence is required".[3]

And Steuart suggests that in that case the proper "method would be to establish an annual subscription *abroad*, for borrowing a sum equivalent to the *grand balance*, the condition being to pay the interest of the subscriptions out of the revenue of the country".[4]

Steuart is very much against the idea that a deflationary or dear money policy should be followed in such a case and warns that "if the bank, from a terror of being drained of coin, should refuse to issue notes upon new credits for the demands of domestic circulation; in this case, I say, they fail in their duty to the nation as banks, and hurt their own interest".[5]

His point is "that as long as there is one single note in circulation, and any part of a *grand balance* owing, that note will come upon the bank for payment without a possibility of its avoiding the demand ", while " so soon as the *grand balance* is paid, it is impossible that any more demands for coin can come upon the bank for exportation ".[1]

---

[1] *Principles of Political Oeconomy*, Vol. II, p. 171.
[2] *Ibid.*, p. 173.
[3] *Ibid.*, p. 173.
[4] *Ibid.*, p. 174.
[5] *Ibid.*, p. 175.

Steuart concludes, " Money is the instrument of alienation; and when this instrument is taken away alienation must cease. Now, it is a matter of indifference as to circulation, whether money be rendered scarce by being sent out of the country by the state in time of war, or by the subjects who owe it to strangers in time of peace. A determinate quantity of money is requisite for domestic circulation. In whatever way this comes to be diminished, it is the duty and interest of banks to fill up the void as fast as possible by readily furnishing credit at all times to those who can give security for what they demand. If banks, by paying balances, shall have exhausted their fund of coin, the fault is their own. Why did they not in time provide the necessary funds abroad? But in whatever manner they pay the balance, the consequence is to take a sum of money equal to it out of domestic circulation; and this cannot be replaced but by more money lent by them upon new securities ".[2] So Steuart expects that the " banks would consider the whole foreign balance as immediately their own debt (and it is so, when they are obliged to pay it) " and " would provide the easiest method of acquitting it ".[3]

But here the state also has an important part to play.

For, " the whole policy of circulation is divided into three distinct branches:

1mo. The melting down of property, and keeping circulation full at all times. This is the business of banks.
2do. The providing of coin is the business of mints.
3tio. The granting bills on foreign parts, for value in the national currency, is the business of the state ".[4]

The state should, therefore, help the banks in every possible way (if necessary even by guaranteeing the regular payment of interest out of national revenue) to obtain foreign loan when the balance of trade is unfavourable. Steuart, however, considers this as no more than a temporary expedient. For an unfavourable balance of trade cannot continue for a long time and the debt will be gradually wiped out as the balance of trade becomes favourable. In the unlikely case where the balance of trade tends to be permanently unfavourable, it would soon lead to a complete cessation of foreign trade.

Steuart has such a great faith in paper money that he would popularise its use as much as possible. Notes should not, therefore, contain optional clauses. This does not, however, mean that they should be necessarily redeemable in coins on demand. He seems to believe

[1] *Principles of Political Oeconomy*, Vol. II, p. 176.
[2] *Ibid.*, p. 608.
[3] *Ibid.*, p. 608.
[4] *Ibid.*, pp. 611–12.

that an alternative way of " connecting the national coin " with the " denominations of the paper " may be to make all interest payments legally demandable in coins.

With this exception, he would make the notes " legal tender in every payment of *domestic debts* ", subject, of course, to the provision that the banks issuing these would be " established by authority " and would be strictly regulated by the state.

With those who oppose the use of paper money because it may prejudicially affect foreign payments and foreign trade, Steuart has no patience :

" What a trifle is a foreign balance, let it be ever so great, compared with the whole alienations of a country ! Is it reasonable to disturb the harmony of all domestic dealings in order to furnish an opportunity to a few clear-sighted people who can, upon some occasions, profit of the fluctuating value of the substance of which the coin is composed, to the prejudice of the ignorant ? If the country owes a balance to other nations, let it be paid : nothing so just ; nothing so essential to the interest of the country which is the debtor. If the precious metals are the most proper vehicles, as I may say, for conveying this value, let them be procured and sent off ; but never let us say, that because *some* of our money *may* be made of that metal, that all our money should be made of it."[1]

This brief restatement, as far as possible in his own words, of Steuart's ideas on money and banking clearly indicates how far he anticipated some well known modern writers.

Had not the brilliance of Adam Smith and the *laissez faire* spirit of the nineteenth century combined to throw him into oblivion, it is quite possible that the school of thought which Malthus and List and Keynes took such a long time to build up might have been more rapidly developed. Malthus' theory of population and concept of effective demand are no new things to a student of Steuart. List's classic criticism of the argument of the *Wealth of Nations* is but a reformulation of Steuart's view that *only* if " industry and frugality " were " found to prevail equally " in every country could trade be " thrown entirely open ". Keynes' ideas on economic policy, especially on the rôle of taxation, public debt, public works and money as instruments for correcting economic maladjustments, have a family resemblance to those of Steuart's. Cosmopolitan in outlook but realist in spirit, both accept economic nationalism of a moderate form as the basis upon which to build up a world system. Both believe that natural forces are potent but not always beneficial and both have a great faith in the directive ability of the state. The similarity between the two with regard to their technique of writing, their attempt to define precisely every economic term they use, explain carefully at every step the logical basis of their exposition and illustrate every important point by facts and statistics, is, indeed, remarkable.

---

[1] *Principles of Political Oeconomy*, Vol II, p. 217.

In sharp contrast, however, to Keynes as well as Adam Smith, Steuart's style of writing is extremely involved and almost unreadable. That is a fault, unpardonable in any writer on social sciences, which is perhaps another reason why generations of historians of economic thought, except a few Germans, have almost completely ignored him, and has thrown him into oblivion.

In this age, however, when readability is not exactly what one looks for in the writings of some of our leading economists and when *laissez faire* is not very much in favour, Steuart certainly deserves to be read again and accorded his rightful place in the history of the development of our science.

Have we a Full Employment Policy?

By H. S. Booker

It would be putting the position mildly to say that it is generally accepted in this country by economists as well as by the public that a higher level of employment can be maintained than before the war and at a cost which is not greater than the benefits that would result therefrom. The benefits of increased employment are easy to see; that there is any real cost would not generally be admitted. In so far as there is any cost at all it would usually be argued that it is a cost to the unemployed, which the unemployed are only too willing to incur for it is the cost of working for wages instead of having leisure. A cost of this kind is not really a cost at all. In a dictatorship this perhaps would be the correct analysis of the costs of full employment, but in a democracy there are numerous repercussions to be analysed as well and it is not certain that they have been analysed adequately.

Not only is it accepted that we can permanently increase the level of employment, but also that it can be done in a free society. By freedom it might be implied that the individual worker is to be free to accept or refuse a job offered as he wishes and that if he refuses that he shall not be deprived of such social insurance and assistance benefits as would be granted to an unemployed person with similar responsibilities who had not refused. Even with the qualification that the full employment must be achieved in a free society, defined in some such way as the illustration given above, it would usually be considered possible to increase employment with only negligible additional costs, such as, for example, the maintenance of a small central economic and statistical planning staff.

The argument is that before the war we had a national income which was produced by some 90 per cent. or less of the population available for work. If this 90 per cent. could be increased then so would the real national income and standard of living. In the limit it appears that production could be increased by 10 units on every 90, or say by 11 per cent. if the whole population available were employed. (It is not desired to enter into discussion here about influences which affect the size of the population available for work or individual efficiency.) It is, however, admitted that this limit will not be achieved. Given the present limitation of capital equipment and the inexperience or inability of those unemployed as compared with those employed an 11 per cent. increase in employment would give an increase of less than 11 per cent. in production, at least in the short run. In the long run the increase in employment would itself generate an increase in capital equipment whilst the inexperience would disappear gradually so that ultimately the deficiency would be due simply to any completely inelastic supply of capital (the classic "land" of the economist) or to any inherent incapacity of those who had been unemployed.

Further, it is realised that we live in a world where conditions both of supply and demand change. It is a world where mines get worked out and new ones have to be opened, it is a world where technical conditions of production change and especially it is a world where tastes change. Because of these changes, employed people have to be prepared to change their occupations and/or workplaces, and it is usually assumed that provision has to be made for a certain amount of (frictional) unemployment whilst such changes are being made. In other words it is agreed that here is a cost of full employment which is greater than the advantages; the cost being a necessary flexibility in our economic system. Usually it is assumed that over long periods of normal activity unemployment could not be reduced to below some 3 per cent. or 5 per cent. Therefore the achievement of full employment as usually defined could be expected to raise production, not by about 11 per cent., but perhaps by 5 per cent. If, however, there is one cost of really full employment which is agreed as being too heavy to be met, may there not be others not yet admitted? That is a question that this paper seeks to answer.

What are some of these other possible costs of full employment? One might be illustrated by reference to the present full employment of houses whereby it is almost impossible to obtain the kind of house wanted if one does not occupy it already; but this is not fully comparable to the problem of full employment of persons, because the person who benefits from the services provided by a house is able, generally, to retain those services indefinitely with unchanged terms. This is not an example of full employment in a free society; to be made comparable our problem ought to be modified so that the employer is able to retain the employed person indefinitely at unchanged wage rates. There is, however, probably something to be learned from this example of houses, in which it has been decided that the cost of full employment in a free society would be too great for the society to bear with the result that the freedom was abandoned in one respect. In a free society rents would have risen more than the majority of the society would like.

Before the war there was a constant queue for employment, as typified by the queues at the insurance sections of Employment Exchanges. We were very conscious of those queues. During the war and since there have been other kinds of queue in which consumers have been waiting to purchase the products of employment. It is agreed that both kinds are objectionable. Both are costs in that they involve waiting, which is the utilisation of the scarce element time, and often they require the utilisation of energy as well. Full employment policy might be likened to the retention of the consumers' rather than the producers' queues, the ensuring of more unfilled vacancies than there are unemployed persons.[1] More jobs than persons wanting jobs would seem to retain in a less intense form the present difficulty in obtaining what one desires and can afford to buy. It seems to retain also the cost of looking for what is wanted and often of accepting something considered to be inferior but which is not cheaper than the article desired. Presumably there is some optimum position between the two types of queue but there seems in practice to be no way of determining where it is. It might be with 3 per cent., it might be with 5 per cent. or with some other proportion unemployed ; one guess seems as good as another.

Suppose it is decided that the object is to maintain unemployment as recorded by unemployment insurance statistics at 5 per cent. That is an objective easily understood and it might be accepted as a reasonable objective by a democracy, but in the absence of administrative manipulations such as the removal of certain persons from insurance or the utilisation of subsidies, it should not be assumed that the maintenance at an unchanged level of some index number of prices is an objective which can be achieved at the same time in a free society. The two might be consistent, but it would be only by accident if they were and policy ought to be directed towards one or the other, not both. Yet many theorists try to run with the hare of full employment and hunt with the hounds of constant prices. To objectors they are likely to say that if the matter is explained clearly to the workers they will agree not to ask for increased wages which might raise prices, whilst explanations to monopolists would similarly persuade them not to raise prices to increase profits if they saw an opportunity. Are these theorists any different from those who in 1931 argued that if only the position were explained to the workers they would agree to substantial wage cuts in order that the exchange value of sterling could be maintained ? In any case exhortation is a policy supplementary to and not part of full employment policy as usually understood.

(Lord) Keynes, whatever some of his followers think, seems to have been under no delusions on this problem. In present discussion we rarely hear that real wages must fall if employment is to be increased, yet Keynes said it. He confirms that " with a given organisation, equipment and technique, real wages and the volume of output (and hence of employment) are uniquely correlated, so that, in general, an increase in employment can only occur to the accompaniment of a decline in the rate of real wages. Thus I am not disputing this vital fact which the classical economists have (rightly) asserted as indefeasible ".[2] In effect he goes on to argue that the increase in employment is to be obtained by increasing prices so that prices rise more rapidly than wage rates. Does not that proposition still hold ? Is not production, at least in the short run, subject to decreasing returns, and will not more labour be employed only if the entrepreneur expects the cost of that additional labour to be lower than the value of its additional output ? If wage rates do not fall this seems to require at least the expectation by the entrepreneur of price increases. Keynes, indeed, seems to follow his desire for increased production quite irrespectively of rising money costs and, in the first place at least, of who benefits. According to Keynes, true inflation is reached only when no further increase in output can be obtained with a further increase in effective demand.[1] Roughly and slightly incorrectly we might say that this was when wage rates rose as rapidly as prices. Are we prepared for a cost as great as this ? Even here we might object that this would not be an equilibrium position, a point which will be discussed later.

---

[1] Cf. Beveridge, *Full Employment*, p. 18.

[2] Keynes, *General Theory of Employment, Interest and Money*, p. 17.

Again, one might be inclined to question whether there is not some optimum position between changes in prices and the level of employment ; few of us want full employment at the cost of " true inflation ".

In an attempt to avoid misunderstandings it may be said that in this paper full employment policy is taken to mean attempts to increase employment by increasing the expenditure of savings and thereby increasing the volume of savings by increasing total income but without altering the propensity to save. Alternatively it is decreasing the propensity to save but not the expenditure of, and hence the volume of, savings because income is increased. The definition is not comprehensive, but it is assumed that the policy only implies the interaction of the factors enumerated. It will be noted that the expenditure of and the volume of savings are so defined that they are always equal. They are really the investment and savings of Keynes' General Theory, but modified to be more realistic in these days of budget deficits. It is difficult to define a budget deficit as an investment, whilst it complicates discussion to consider it as negative savings ; yet it is appropriate to consider that it requires savings to be made.

The argument behind the theories of full employment has been developed from the observed fact that in a relatively stable economy with a moderate volume of unemployment it is usually possible to increase employment by the injection of additional money and credit into the system at suitable points. This increases the pressure to obtain goods and services for money, increasing monetary demand. The injection of money is normally achieved by increasing Government expenditure or decreasing Government receipts from taxation, in other words by increased Government borrowing. The other favourite method is by the redistribution of income in such a way that those who do not save get an increased proportion and those who make substantial savings get a decreased proportion of the total income. This means that expenditure on consumption would increase, and with it employment.

---

[1] *Op. cit.*, pp. 303 and 118.

The argument may be, and often is, put another way; a way which perhaps is a little less general and may sound a little more scientific. This says that investment should be increased—investment meaning expenditure on capital equipment including public works. This increased expenditure, in favourable circumstances, normally means that total income in the country is increased by the same amount that investment is increased without any immediate effect upon the supply of consumption goods. The demand for consumption goods, however, will increase because a substantial proportion of the increased income will be spent upon consumption, that proportion being the marginal propensity to consume. The increased demand will continue generating income as the result of the multiplier effect to a new equilibrium, in which income is increased by some multiple of the increased investment, the multiple being the reciprocal of the marginal propensity to save.

The first of these two descriptions seems the more applicable to policies of full employment as now usually discussed, the second if it is assumed that the generating factor is not to be an increase in the budget deficit (or a decrease in the balance). Often, however, an attempt is made to combine both descriptions by suggesting an increase in Government expenditure outside the budget on the provision of capital equipment, this to be called the capital budget.

One of the fundamental questions of a full employment policy is how far a given increase in income will be absorbed in increased costs (and prices) and how far it will increase employment. The answer is that it will depend very largely upon conditions of employment. In 1930–'32, when prices were low as compared with what they had been two to four years previously and when unemployment was high, it is probable that much would have been absorbed in increased employment. It was after experiencing this period that Keynes wrote his *General Theory of Employment, Interest and Money*. It is as a result of discussion of the "Great Depression" that full employment policy was developed. We must not fall into the danger of assuming that a similar effect would be obtained under all conditions as in 1930–'32. What will happen with unemployment at 5 per cent. is very different from what would happen with it at 20 per cent.

Workers in their demands for increased wages are concerned not only with prices and the level of employment, but also with what might be called progress quite independently of the other two items. They like periodical increases in their wages such as can be granted when real national production per unit of effort is rising. In manufacturing industries output per man hour rose by about 2 per cent. per year between 1924 and 1935, so that if the distribution of the product remains unchanged there ought to be a trend of about this amount in wage rates. If the rate of increase is lower than this, one would be inclined to say that, after allowing for progress, real wage rates are falling and hence employment ought to be increasing. This was possibly happening in the years from 1900 to 1914, when working class standards were not rising and yet large investments were being made overseas, but it must not be assumed that such a period is again possible, for people have learnt a great deal about real wages since 1914. But there are many factors to allow for, including changes in the conditions of employment, such as the granting of holidays with pay, as well as real standards of consumption, whilst a modern economy with its large supply of capital equipment and durable goods can run for a very long time at a rate which is not in equilibrium and which cannot be maintained indefinitely, as for example the recent period of six years' consumption of capital at home and serious adverse balance of overseas trade.

Following this discussion we might conclude that the rate of rise in money wages can usefully be expressed as a function partly of the rise in prices, partly of the volume of employment and partly of the increase in efficiency. The function is such that normally the proportionate rise in prices is greater than the proportionate rise in wage rates, so that with rising prices real wages are falling and hence employment is increasing. The influence of the employment factor is to modify this, and is such that as employment gets high it is positive but that if employment is low it is negative. The efficiency factor may be considered for the present as a constant positive trend. After removing the trend it will be seen that if employment is high the employment factor being positive adds to the normal rise in wage rates when prices increase and the rise in wages may be as great as the increase in prices, in which case full employment policy would have no influence in increasing employment further. In Keynes' definition there would be true inflation.

Before the war there was some degree of stability with employment around the 85 per cent.–90 per cent. level and with prices and wage rates varying only moderately. If for a short period employment had risen to 95 per cent., stability would not necessarily have been upset, though no doubt there would have been greater pressure for wage increases. People would have considered that "times were good" and by that expression they would have indicated that they did not expect unemployment to remain at that low level for long. Thus the pressure for wage increases would not have been so great as if 95 per cent. had been employed for a long time; it would not, for example, have been so great as it would be if a full employment policy were being successfully pursued.

It is difficult to think that, because of the war, workers will be less anxious for wage increases than they were or that they will exert less pressure to obtain them. Some would say that they are more ready to press for wage increases as the improved social insurance scheme will diminish willingness to work. It is true that if people are paid sufficiently to be "unemployed", which actually means occupied according to their own, rather than someone else's, ideas, then they will willingly be unemployed. After allowing, however, for changes in prices and wages it is to be doubted whether the new rates will have much general effect upon incentive, especially as children's allowances, apart from those for the first dependent child, are to be given when a person is employed as well as unemployed. The position will be a little different with regard to sickness, for before the war the married sick man was at a serious disadvantage compared with the unemployed man. That disadvantage is to be removed, so that compared with before the war, the incentive to be sick will be increased. Even during the war, with its full employment but without substantially increased sickness benefits, sickness rate has increased whilst apparently health has not deteriorated. It is probable, therefore, that any increased demand for wage increases as compared with before the war is associated with the present high volume of employment; it is due, that is, to the employment factor of the function defining the rate of rise in money wages.

Increases of wage rates, however, depend not only upon the pressure from the workers but also upon the willingness of employers to allow those increases. Again the influence of a high level of employment will be inflationary, for just as it increases pressure from the workers so it increases willingness on the part of employers to grant increases. If employment is high it is because employers think it pays them to keep it high, and so they will be reluctant to lose employees either to other firms or for short periods because of strikes. If employees are lost they will be difficult to replace in a period of high employment; it means taking a choice from the few unemployed, which is likely to mean employing people not really suitable, or alternatively it means attracting workers from other employers not wishing to let them go. If a team of workers is fully occupied an employer will be loath to allow it to be broken up and so will be willing to pay higher wages to prevent a break-up. If broken up he will have higher costs to replace it, either because the replacement will be less efficient or because higher rates will have to be paid to attract workers from elsewhere. An agreement between employers not to attract workers one from another by means of higher wages would probably imply competition to attract workers by granting facilities outside wages, which increase the cost of production in a way similar to wage increases. In other words, with full employment the employer would be much less likely to meet a demand for higher wages with the statement that there are many willing and capable of taking the job at the present rate, so that he sees no reason for granting the increase.

There is a further difficulty. When prices rise, wage rates may at first tend to lag and so employment will rise. What happens when prices stop rising? Do wage increases stop immediately? If prices rise 5 per cent. and in the same period wages rise 2 per cent., what happens when prices are stabilised? Usually wages continue to rise, typically until they have risen 5 per cent., partly because of the argument that the cost of living has risen by that amount, but also because the average rise of 2 per cent. will conceal many cases of no change as well as some of 5 per cent. increase. The " no change " people will continue pressing for increases, not only because of the rise in the cost of living, but also because of the rise in wage rates in other industries and the desire to maintain the customary relationship between industries. It seems likely, therefore, that the increased employment will persist only for a short time, and that unemployment will gradually increase when the price rise ceases and will tend to return to its original level, unless there are other factors to be allowed for.

Does this mean that full employment requires a continuously increasing price level ? If prices rise at a constant rate, will wages (allowing for any increased efficiency) consistently lag behind so that real earnings have fallen ? This is improbable, as the lag in real wages is only because of the basis from which workers normally look at the price level, it being assumed as a first approximation that prices remain constant. If prices rise continuously a new assumption will begin to be made and it seems likely that wages will then keep pace with prices, and there will then be no incentive to employers to increase employment because of the lag in wage rates.

The conclusion reached so far is that, as a long-term continuous policy, the policy of full employment as usually understood will fail to reduce by itself the average proportion of unemployment in a free society, and that it will fail whether prices are kept stable or allowed to rise, though in the latter case employment might continue high for a longer period than in the former. This does not mean that an average of 10 per cent. unemployment need be a persistent feature of our economy, but simply that the policy usually called the full employment policy is not really a policy for maintaining a higher average volume of employment than before the war but a policy for limiting fluctuations in employment ; it is a policy for preventing " great depressions ". If it is used to try to raise the average volume of employment, it is likely to be successful only for a time and to cause in the long run more troubles than it cures.

Perhaps an important qualification ought to be added to this rather dogmatic conclusion. This is that, if employment is increased, it is likely to have an influence upon the trend of real income by increasing efficiency. Output per man-hour depends not only upon organisation but also upon capital equipment, and with increased employment investment is likely to increase. This will happen if the increased employment is associated with wise investment rather than with a budget deficit on current account. It is more likely to follow investment in industrial equipment than in houses. It may be that this possibility of increasing earnings because of increased efficiency will help to satisfy the demand for increased wages because of the high level of employment. This is a desirable effect of temporarily increasing employment and it may make a permanent increase possible, though its probable effects might easily be magnified. We might assume that normally 6 per cent. of national income is used to increase capital equipment, but 40 per cent. of any increase in income. Suppose we have full employment and real income increases by 5 per cent., then out of 105 units of income 8 are used to increase capital equipment, or say 7½ per cent. of the total. If, when 6 per cent. of national income is used to increase capital the real national income per unit of effort rises by 2 per cent. a year, it would seem unreasonable to expect an increase of more than 2½ per cent. a year if 7½ per cent. of the income is used to increase capital.

Added to many descriptions of full employment policy are other policies which are not considered in this paper to be part of full employment policy itself, and many of these may have a long-term beneficial effect. Exhortation is one of the chief of these and it has already been briefly discussed, but that it should be considered necessary seems to be an admission that full employment policy is not itself sufficient. Exhortation typically involves persuading workers not to press too actively for wage increases when conditions are such that they could, and would normally, obtain them. A Labour Government supported by the trade unions might do something in this direction, but the incentives to press for wage increases will be great with low unemployment, whilst there is also the desire to increase real standards of living continuously as indicated by the trend term in the function previously given.

This trend term might now be discussed a little more fully. With the war-time net loss of capital at home and abroad it may be some time before the pre-war volume of consumption per unit of effort again becomes possible. If employment is high it will be difficult to get this fact accepted as a reasonable argument for not increasing wages. Even at present there seems to be a desire to maintain the pre-war volume of consumption with decreased effort, as typified by obtaining more holidays with pay and requests for shorter working weeks without reductions of pay. There are, however, factors which will help to raise employment; for one thing pre-war is now a long way off and workers may be willing to accept increases in real consumption above the *war-time* level as satisfying their pressure for an upward trend in real income. It may be that workers expect an increase in real earnings not only from an increase in total production but also from a redistribution of income in favour of themselves. They may expect modifications and reductions in taxation to be so directed that the marginal cost of the worker to the employer is decreased whilst the reward to the worker is increased. Many seek from a Labour Government not only, or even mainly, an increase in total national production but also a transfer that reduces income from investments and increases income from direct effort. Such a transfer might allow for the maintenance of a high volume of employment for a long time, but it has to be done carefully. Keynes has taught that with our present organisation rentier income can be cut without affecting demand for labour, but that this is not true of entrepreneur income.

Rentier income has been cut greatly during the war. By the cheap money policy the rentier gradually has his income from a fixed volume of investment reduced, the reduction being only gradual because opportunities to force him to convert to a lower rate of interest depend upon the terms of his original investment. At present this reduction in money income is supplemented by a further reduction in real income through the rise in prices. It seems, therefore, that because of cheap money and the rise in prices the entrepreneur has his profits increased even though real wages remain unchanged. It is the natural reaction of the entrepreneur to increase production when profits increase because he is under the impression that this will maximise his profits. This may increase employment for a long time as it is doubtful if marginal costs can be accurately measured, but it depends upon the maintenance of low interest rates and the increased prices. It depends upon what has come to be called the euthanasia of the rentier.

The preceding paragraph describes the influence of the cheap money policy on the individual entrepreneur. The question of the redistribution of income is concerned also with other factors such as taxation and the wartime increase in the national debt. Any substantial increase in interest rates or reduction in prices would show that the euthanasia had been only anæsthesia and that on full recovery the patient would prove more voracious than ever before. Taxation during the war has effected an enormous redistribution against investment income, but present trends seem to be in the opposite direction.

Another factor which might be expected to increase the proportion of the national product distributed in return for work is the policy of nationalisation. There are many reasonable people who do not expect nationalisation to lead to any marked change in efficiency but rather expect shareholders to receive a smaller proportion of the total product. In other words they expect the State, having taken over the function of risk bearer, to distribute the rewards of risk bearing, not to the ordinary shareholders (or those who were ordinary shareholders) but more widely. Nationalisation would thus replace ordinary shareholders with rentiers, who would receive the lower return obtainable on Government securities.

This digression has been to suggest that if there is not an upward trend in real wages the pressure to raise money wages is likely to increase quite apart from the volume of employment; that total real income may not be higher than before the war, but that the pressure might be relieved by a redistribution of income in favour of earners.

The usual criticism of the National Government's White Paper on Employment Policy (Cmd. 6527) seems to be that it is too cautious. It is considered to indicate unwillingness to take sufficiently drastic action to increase employment. In fact it does seem to stress that the proposals are rather to prevent a slump than to increase employment, whilst the steps suggested are very half-hearted. It is usually assumed that the proposals are intended to prevent a decline from the wartime level of full employment, but they may also indicate considerations akin to those outlined in this paper. They may indicate that full employment policy is not a policy for raising the average level of employment but for preventing depressions. The White Paper states, "The Government are prepared to accept in future the responsibility for taking action at the earliest possible stage to arrest a threatened slump" (paragraph 41). Thus the caution of the White Paper may be one of its advantages. Because employment can nearly always be increased over short periods by increasing expenditure it does not mean that this should always be done. It may be compared to a drug which is likely to lose its efficiency when it is most required if it is used persistently, whilst it is an expensive drug, likely to cost the stability of prices.

Three possible objectives seem to be indicated by "Employment Policy". They are :—

(i) Maintaining purchasing power;
(ii) Maintaining a high and stable level of employment;
and (iii) Maintaining reasonable stability of prices.

It seems to be assumed that the three policies are consistent and perhaps with the loose phraseology it might be agreed that unchanged national income (maintained purchasing power) is consistent with reasonable stability of prices and employment. On the other hand a high level of employment is usually taken to mean a level substantially higher than before the war, and it is doubted if there is any justification for assuming that employment in a free society can permanently be held at a level substantially higher than before merely by the maintenance of purchasing power or even by its increase.

The Marginal Cost Controversy[1]: A Note on Mr. Coase's Model

By G. F. THIRLBY

THIS note is not intended to question Mr. Coase's preference for "multi-part pricing" rather than for "average cost pricing" or "the Hotelling-Lerner solution". It is a suggestion that his "next steps" (p. 182) should not be taken until he has retraced his first one, explicitly discussed certain elements inherent in his model, namely, administration, credit and the time-dimension, and explained to us how administration and credit can be remunerated and charged for on the basis of "costs", or, if they cannot be so dealt with, how their intractability affects the principle of "basing prices on costs" (p. 173). "Reconstruction of the Model" (below) suggests some of the issues involved, but still lacks discussion of the important element of credit.

RECONSTRUCTION OF THE MODEL

What, in Mr. Coase's model, is the "cost", of either transport or the goods supplied at the central market, that is to be charged to the consumer down the road? It is either (*a*) the price to be paid by a *buyer* in the market, who must be presumed to have some incentive to buy in order to resell "at the point of consumption" ("The product is sold at the point of consumption"—p. 171), or (*b*) the reserve price at which a potential seller in the market 'buys in' his own goods (or transport service). This reserve price is the price at which the potential seller could sell to somebody else *on the spot*. It must therefore be presumed that he has some incentive to withhold the goods from sale. Having 'bought in' his goods (or transport service), this potential seller will be in a similar position to that of the buyer under (*a*). It appears to be unnecessary, therefore, to distinguish him further. I shall assume that a buyer purchases the goods and transport service for resale "at the point of consumption", and shall—although I ought not to—overlook the difficulty of one person's buying simultaneously in two markets ("All costs are currently incurred"—p. 171). There is, then, an intermediary standing between the sellers in the markets and the consumer. The presence of this intermediary is inherent in Mr. Coase's simplified situation, and ought not to be ignored. In the discussion which follows, I shall try to say nothing about the intermediary which contravenes Mr. Coase's stipulation that "all costs are attributable to individual consumers" (p. 171), but, on the other hand, I shall leave it to Mr. Coase to devise an assumption which confines the intermediary's selling activities to a single road (and a single consumer).

---

[1] *Economica*, August, 1946.

What is the essential incentive to which I have referred under (*a*) and (*b*)? I suggest that it might be the possibility of selling something—which I shall refer to as 'administration'—jointly with the goods and transport service at a (joint) selling price higher than the market prices for the goods and transport service. It may be said that the work of administration can be regarded as only another factor which can be charged on the basis of "costs" in the same way as the other two factors, that its treatment involves no new problem, but only the introduction of a third "part" to the two-part tariff, and that consequently, although the administration is inherent in the situation, and although the addition of its "cost" into the price to be charged would restrict total sales, it can be allowed to be overlooked. I shall return to this point.

What is the work of administration? It might be thought that the intermediary would try to get to know in advance the likely demand at the point of consumption at various prices. Why at various prices? Prices are to be based on "costs", and we are told that the "product [at the market] is available at constant prices" (p. 171). But this can hardly mean that the price at the market is to be constant *over time*: a horizontal curve can move up and down. Before the market opens, price cannot be known for certain. So the intermediary might be expected to investigate consumption demand at various prices related to what he thought likely to be the ranges within which the market prices of goods and transport would lie and to the likely charge for administration which is still to be discussed. This he would do in order to instruct himself about the appropriate quantity to buy. Is this all he does before the market opens? Does he carry the risk that, when the goods are eventually brought to the point of consumption, demand will be different from his anticipations of it? Does he bear the responsibility for hanging stocks or shortages? Not in this case. Whether or not the expression "all costs are currently incurred" *means* that the "costs" are incurred simultaneously with the sale to the consumer, we must assume that they are, because, if one moment of time intervenes, our charging according to "cost" (price paid on purchase) involves us in a 'cost of production fallacy' of the same order as the charging of "so-called fixed costs [which] are in fact outlays which were made in the past for factors, the return to which in the present is a quasi-rent" (p. 170). So we are obliged to assume that, before the market opens, the intermediary has obtained from the consumer a contract agreeing to take over one of various alternative quantities of product, the alternative quantity ultimately to be taken to be fixed simultaneously with the intermediary's purchases, and to depend upon the prices paid by the intermediary for goods and transport plus a charge for administration still to be discussed. The complexity of this contract,[1] when each price may be higher or lower, and higher or lower in relation to the other, I need not dwell upon. Neither need I do more than mention that the risk that consumer's demand will not be the same at the time of delivery of the product to the consumer as it was expected to be at the time of the contract (but not the risk of a bad debt occurring) is now transferred to the consumer himself.

How is the "cost" of the intermediary, or administration, to be discovered and charged to the consumer? The assumption that "all factors are in perfectly elastic supply" (p. 171) presumably has to mean that the administration, like the commodity at the central market, "is available at constant prices". The assumption that "all costs are currently incurred", and the necessity to avoid the 'cost of production fallacy', have to mean that the administration market occurs simultaneously with the commodity and transport markets. On the principle of charging on the basis of "costs", the market price of administration is the appropriate figure to include in the sum to be paid by the final consumer. So it would appear that the quantity of product ultimately to be taken by the consumer depends upon the price emerging in the administration market as well as upon the other two market prices, and that this variation is provided for in the contract already in existence by the time of the market.

Now, unless we introduce another *person*[2] (I might call him a 'higher administrator') into our distributing organisation, and by doing so only succeed in leaving *his* "cost" unexplained, our intermediary (the sole member of the distributing organisation) must, if he is in the administration market at all, be regarded as a potential seller "buying in" his own services at a price at which he could sell them to somebody else who is a buyer in the administration market. So, apparently, if the contract with the consumer shows any demand for the final product at the three market prices achieved, the intermediary "buys in" his services and supplies the consumer on the basis of "costs". At first sight everything appears to be in order.

If, however, we look a little longer, we may become suspicious that this market price of administration is supporting itself by its own bootstraps. I do not know whether this is so: I can only state my own difficulties. In the last paragraph, our intermediary appeared as a potential seller " buying in " his own services. What is it that he has to sell ? The result of the market investigation that he has already done—with the contract thrown in ? Who is going to bid for that with the intention of buying it ? Whatever price he paid, if he did buy, would go to the intermediary, and not more than the same amount would be recoverable from the consumer. There seems to be little incentive to anyone to bid at all. Nor is there here anything like a " perfectly elastic supply " : only a particular piece of information and a contract. If other people brought other contracts of the same nature to the market (swelling the "supply"), each would apparently be in the same position of attracting no bidders, and of supplying an additional specificity instead of another unit of a fungible good. The only " solution " that I can think of is that each supplier would bid for his own contract (or, collusively, for another supplier's) to the highest price which, in the contract, retained the consumer's demand for any supply of final product at all—or to some lower price which his social conscience dictated.

---

[1] I cannot refrain from mentioning that, if the principle of charging on the basis of "costs" were carried back into earlier stages of production, the intermediary at this last stage would be the "consumer" in the penultimate stage, and would, by the time of the "markets" in which he is supposed to purchase, already have signed, and become liable to take delivery under, a contract to purchase the product of the earlier stage (the goods and transport that he is supposed to be acquiring and distributing). If the prices of this contract were to be the prices to be charged as "costs" to the final consumer, we should have to assume, in order to avoid the 'cost of production fallacy', that the intermediary had entered into his selling contract with the final consumer simultaneously with his entrance into his purchasing contract with his supplier, i.e., before the penultimate "markets" opened, i.e., still earlier than before. But then the ultimate "markets" would have been avoided!

[2] It will be remembered that if a potential seller in one of the other markets is "buying in" his commodity for our consumer, he is already our intermediary—*vide* opening paragraph.

It might, however, be suggested that the market is one for raw administrative capacity, whose buyers purchase capacity to do work which is not yet done, and whose sellers are willing to undertake that work ; and that the price achieved there is to set the price (" cost ") which our intermediary is to charge the consumer for the work which he has already (at least partly) done. The intermediary could sell his raw administrative capacity there, receive the market price for that from the person to whom he had sold it, and also eventually receive from the consumer the same price (if his contract with the consumer allowed any supply with that " cost " included) for his past services. Alternatively, if he preferred to be free (e.g., to continue to serve the same consumer), he could buy in his raw administrative capacity, and charge the consumer the same market price for his past services. Other things (e.g., his relative preferences for subordination and freedom) being equal, his decision would presumably depend upon whether or not he thought the future price in this market, which would set his remuneration for his interim services if he remained free in the interim, would rise or fall in the future, and whether he thought his prospective consumer would in the future have any demand for the final product if the " cost " of administration rose.

Have we now satisfactorily established a market ? I am not certain, for this reason. Our intermediary is not a *buyer* of raw administrative capacity. I said before that for there to be a buyer (as distinct from a " buyer in ") representing *our own* distributing organisation in the administration market, another person (a higher administrator) would have to be introduced into our organisation, and that by introducing him we should only succeed in leaving *his* " cost " unexplained. Now, in order to make this market for raw administrative capacity effective, we have implicitly inserted such a person and his unexplained " cost ", not into our own organisation, it is true, but into every organisation that is a buyer (as distinct from a " buyer in ") in the market. Is it logically satisfactory to do that simply to make it possible to discover a way of charging on the basis of " cost " in our own organisation ? The more we extended the principle of charging on the basis of " cost " to other organisations, the less should we be able to assume that there were buyers in the market whose residual " cost " could be left unexplained.

If the attempt to establish a market for administration fails for this or any other reason, the principle of charging on the basis of " costs " itself appears to fail. The contract with the consumer contained the prices which the intermediary thought likely to be established in the administration market. The alternative amounts of final product agreed to be bought by the consumer were related to those expected prices. Without an impending market to fix them, they would have been replaced by ' surpluses ' or ' profits ' which the consumer was willing to pay over and above the prices to be fixed by the central commodity and transport markets.

A QUERY ON DEFINITION

My suggestion that Mr. Coase should discuss the administrative element inherent in his model prompts a parallel one that he might reconcile the *ex ante*, administrative, view of cost and its relation to price with his statement on pp. 172–3 :

> " The price should be the one which equates supply and demand and it should be the same for all consumers and in all uses. This implies that the amount paid for a product should be equal to the value of the factors used in its production in another use or to another user. But the value of the factors used in the production of a product in another use or to another user is the cost of the product. We thus arrive at the familiar but important conclusion that the amount paid for a product should be equal to its cost ".

These sentences seem to imply that all uses that are to be taken into account are included (actually to be supplied) uses, and that the " factors . . . . in another use . . . " are factors of the same kind actually to be used in another (*included*) use. From the *ex ante*, administrative, angle, however, the other use which is compared with the one to be included is a use which is considered but displaced, or *excluded*.[1] Moreover, in the excluded use, the value of the factors is *lower*[2] than it is in the included use. From this angle, the (significance of the) amount (to be) paid for a product should be higher than, not equal to, its cost. The (tendency[1] to) equality occurs through augmenting the application of factors where the significance of their product stands high at the expense of uses in which the significance of their product stands low, and might be said to be an *ex post* result of administration which *ex ante*[2] was confronted with (significant) inequality. If, as I believe it is, the tendency to equality *ex post* is dependent upon the efficiency of the *ex ante* search for inequality, the distinction is more than a quibble.

---

[1] " In the theory of production they [costs] reflect . . . . . the value of alternative uses of productive factors—that is, of products which do not come into existence because existing products are preferred ", and " According to Wieser's Law, costs of production under competitive conditions . . . . . are essentially a reflection of the strength of excluded demands ". L. Robbins, " Certain Aspects of the Theory of Costs ", *Economic Journal*, Vol. XLIV, March, 1934, pp. 2 and 6 respectively.

[2] " If the alternatives that are open now . . . . are taken as the ' cost price ', it is below that of the product ". Wicksteed, *The Common Sense of Political Economy* (London 1933, Routledge), p. 382.

---

[1] "There is a constant tendency for prices to conform to cost of production; that is to say, for the price of the thing I make and the price of the thing I might have made instead of it to coincide". *Ibid.*, p. 382.

[2] "Whenever in serious discussion cost of production is said to exercise any direct control on price, the cost of production intended is cost that has not yet been incurred, and the price meant is not the price at which an existing commodity is offered, but the price at which a promise is made to produce it". *Ibid.*, pp. 389–90.

State Enterprise Price and Output Policy and the Problem of Cost Imputation

By HARRY NORRIS

THE contribution to " The Marginal Cost Controversy " by Mr. Coase in the August 1946 issue of *Economica* has prompted some thoughts on this question which I will attempt to express in this article. What a salutary thing it is that in the same issue there should appear Mr. A. Radomysler's criticisms of Mr. Lerner's pedantically-specialist view of " Welfare Economics and Economic Policy " contained in the latter's *The Economics of Control.* Though, in quoting Mr. Lerner, Mr. Radomysler omits the proviso in, " Except when they radically affect the working of the system, we must leave to the politicians the political problems of compromise," he is surely right in his view that in this book one is apparently being urged to assume that the satisfaction of the " Rule " (the equalisation of price and marginal cost) will solve the world's problems, and that the choice between leaving an industry in private hands or nationalising it may be determined solely by reference to the likelihood of the Rule being satisfied.

THEORY AND PRACTICE

These warnings are very timely. Let us be quite sure that in conducting this controversy we are discussing the problem on the theoretical level. Economists have lost face too often in the past through venturing into questions of " How " before the degree of abstraction in their reasoning had been reduced sufficiently to relate theory to practical affairs. It would therefore be a good thing to try to secure a little more general agreement on this question of pricing and output before proceeding to set out and publicise the Rules.

This is not to say that whilst avoiding—or postponing—prescription we must ignore altogether the impact of practical expediency. On the contrary, I cannot help suspecting that the level of abstraction in a good deal of economic literature is such as to make the reasoning unduly remote from reality. Discourses on the monopolist's equalisation of marginal revenue and marginal cost form an interesting mathematical exercise, but I doubt if they are more than that. Few business men know, or can know, their marginal revenue. Nor is the optimistic assumption that marginal cost is capable of accurate calculation altogether justifiable. In the world of business the managers proceed on the basis of working rules which unquestionably do not bring about the relationships between revenue and cost which are contemplated in a great deal of economic writing—there are far too many unknowns for the business man to behave like an economist's model system. Mr. Lerner appears to assume a nearly perfect solution of the problem, but I find myself in wholehearted agreement with Mr. T. Wilson (writing in the *Economic Journal*, December 1945—" Price and Outlay Policy of State Enterprise ") when he says, " . . . . the outcome is likely to be a series of detailed studies, not a new ' Principles ' . . . . the economics of welfare is likely to be much more untidy and subdivided into sections with few rules applying with complete consistency throughout ".

Let us therefore be patient a little longer; the problem is not one of extreme abstruseness and the answer may be just round the corner, though I lay no claim to offer the solution myself. Perhaps the answer has already been provided; but it is reasonable to think that there has been something unsatisfactory in the exposition of it if it has not commanded widespread approval.

I cannot feel that Mr. Coase has added a great deal to the development of the analysis in his article, though his support of the proposition that multi-part pricing is a possible solution in some cases is valuable. In choosing for an example the incidence of delivery costs, he considerably restricts the scope of his analysis. He assumes a central market and only one delivery for each journey of the carrier. Since it is unquestionably " clear that the cost of supplying each individual customer would be the cost of the carrier plus the cost at the central market of the number of units consumed by that particular consumer of the product ", I cannot imagine that the Lerner Rule would be applied so literally that a manager would charge each customer with the central-market cost only (the carriage costs being invariable within limits in relation to the quantity of goods taken). The marginal cost of each item of sales includes the appropriate carriage charge, and even though Lerner does not mention this case, he would surely regard it in this light just as private enterprise frequently does. If the carriage charges are large in comparison with the value of the goods, a multi-part tariff is frequently used under private enterprise by the making of a specific charge for delivery.

Lerner's solution is not seriously disturbed by this criticism about directly attachable selling costs, and the Rule could still be operated in relation to the price of all goods when brought to the point in space at which they are available for a number of customers. In Coase's example it is certainly clear that the carriage charges should not be borne by the Government. It would have been more useful to take the case of delivery to, say, two customers per journey; but for some reason he seems to regard this as a " next step "—the " problem of pricing where there are common costs ". There is no doubt in my own mind that this should be a first step, and we shall be no nearer to the end of the controversy until we take it.

INDIVISIBILITIES

If we consider the case of a number of potential customers situated together at some distance from a central market from which all their supplies come, then we can apply outselves to the question what to do where, if customers are charged central-market cost plus a proportion of the delivery cost, the lorry is not filled. Here, the lowering of total charges to buyers would produce an increased demand which could be satisfied up to the limit of the lorry's capacity without adding to social costs. The elasticity of demand may even be small enough to produce the situation that though buyers were charged only central-market costs, the lorry was still not full.

Now the question of whether the theoretical optimum distribution is obtained if prices are here equated with marginal costs is no doubt very interesting, but I suggest that practically it is unimportant. There are two reasons for this. The first is that the impact of indivisibilities varies at the margin of the lump of factor—the marginal cost of an extra unit beyond one plateau of capacity may be very great. This impact may therefore vary quite spectacularly in a short period, and the only course to be followed in the vast majority of cases is to treat the cost of the indivisible factor as apportionable to customers. A railway company cannot adjust its fares to maximise revenue from each train—it cannot even cancel a train if there is insufficient revenue to meet the total marginal cost of running it. And in no type of business that I can think of would one be able to make the constant changes in price necessary to satisfy the Rule.

Equilibrium of Demand and Supply

The second reason why this equation of prices with marginal cost is of purely theoretical interest is that in nearly every case, as a matter of practical administration, one would not dream of fixing prices by reference to supply considerations. To do this would clearly involve discrepancies between demand and short-period supply (i.e., the rate of supply with existing resources without the aid of resources which can be brought into play only after some lapse of time), and as we know only too well from our experience of the last few years, our distributive system is seriously discommoded by quite small discrepancies. Retail stocks of most commodities vanish quickly if (unrationed) demand exceeds supply. On the other hand, there are many goods which must not be allowed to remain in the shops for long or they will decay. It seems to me that the discovery that "byegones are byegones" applies much more widely than merely to fixed equipment; the cost of raw materials is also a bygone once they have been acquired. However, that is of no consequence to the administration: the method to be followed is simply to fix prices at such figures as will keep stocks at required levels throughout the various processes of manufacture and distribution. Any other procedure will involve queues, under-the-counter transactions, bribes, losses through perishing, maldistribution and numerous other evils familiar to us in the present-day partial abandonment of the pricing mechanism.

Mr. Lerner is aware of this need for fixing prices so as to dispose of supplies first of all and then expanding or contracting production as a second step. However, he glosses this over as though it were a simple matter, whereas it is a long-period problem which is never quite solved. A surplus of revenue at the margin may be such as to indicate a demand which would justify a new wing to a factory capable of yielding just sufficient output to enable price to be equated to marginal cost. But it is highly improbable that, by the time it came into production, the conditions of demand would be precisely the same. Nor for that matter would a prudent manager under " normal " capitalist conditions erect a new wing only just big enough to meet estimated demand. And neither under " normal " conditions nor under Lerner's completely decentralised but " controlled " economy can a manager forecast the future demand for his output without knowledge of what other managers are doing by way of expansion or contraction of facilities. In view of Lerner's exaltation of the importance of obeying the Rule, it is surprising that he has advocated a policy of allowing each manager to attempt to adjust his output so as to satisfy this Rule. I cannot imagine that the optimum distribution of resources and output will ever be achieved with precision in any kind of economy, but I should have thought that it might be claimed for a measure of central planning that it contained the possibility of a much nearer approach to the satisfaction either of Mr. Lerner's or any other Rule.

The Retail Sector

Another reason why decentralised price administration is unworkable is that it is extremely valuable to have more or less uniform prices for similar goods in different shops. Mr. Lerner and the other writers on this question have not mentioned that very important part of the economic system—the retail sector—in which goods are marked up by a half to a quarter of wholesale price. Now I am not at all sure what the " controlled " retail sector ought to do if it is to live up to any Rules, but I have the strongest suspicion that if each establishment pursued its own devices we should have the most remarkable discrepancies between various establishments. This would not be so very objectionable if it were not that the discrepancies would change in amount with considerable frequency with the consequential shifts in consumer demand. The consumer, however, cannot plan his weekly household expenditure at all rationally unless prices are fairly stable, and, in relation to " standard " commodities, do not vary spectacularly between different shops by reason of some peculiarities of situation on their respective cost curves and the differing impact of indivisibilities.

Retailing provides us with an example of the impossibility of measuring marginal cost. The costs of retail distribution consist of materials at wholesale prices plus various other items, notably wages, as to which economic choices are open in relation to number of assistants and their quality. We may think of the different policies followed by the astute individuals who surround the customer with attentions in Bond Street, and by those equally astute ones who employ assistants who spend only a few seconds per customer in the chain open-counter store. The policy followed clearly involves considerations of marginal cost and revenue—but only "considerations" of—they are not measurable even after the event. Now the labour costs in a shop are common to all customers; the Lerner Rule might involve equation of selling price with wholesale price (strange that he leaves the reader without practical interpretation of his lengthy exposition of the Rule), but I cannot help feeling that the "controlled economy" solution ought to be more or less the same as the capitalist one so far as these common costs are concerned. In other words, a socialist manager, in deciding how many (and what kind of) shop assistants to employ, must decide whether the social cost of employing them is justified by the test of whether enough customers can be found to buy enough and pay enough to cover these labour costs.

There is no precise basis of charge for the goods on offer. If by discrimination a shop manager can sell enough to meet his total costs in a situation in which he would otherwise incur a loss, then discrimination adds to social well-being. But, of course, it is quite impossible to attain the optimum degree of discrimination. It seems to me that a reasonable working rule for retailing is to achieve a uniform gross profit rate on goods of similar kind.

This is not to say that there would not be a considerable adjustment in the retail sector of our economy if optimum prices and turnover were reached (one suspects that the distributive system is particularly subject to a wasteful application of resources—a waste which is the price of individualism, a price which the economist might try to measure but which it is not for him, *qua* economist, to compare judicially with the differences in economic structure which it carries with it). But the adjustment would be less spectacular than would apparently be involved by the application of the Lerner Rule of bringing price into equality with marginal cost—which I think I am right in assuming would mean the immediately attachable cost—the wholesale price. Under the Lerner solution we should meet the whole overhead cost of retail distribution through taxation. There is no way of being certain that the amount of resources devoted to distribution is *exactly* right, but I cannot think that this method would provide any test at all of the worthwhileness of opening a shop or employing a number of sales assistants (leaving aside the inconvenience of high rates of direct taxation—high rates of indirect taxation being comparable with the adding of fixed percentages to wholesale prices to determine selling prices).

Discrimination

Omniscient discrimination would be needed to attain optimum production and distribution. Marginal cost naturally sets a minimum to price in equilibrium conditions, and the scope for discrimination lies within the area of common costs. There seem to be the following ways of recovering these common costs :—

- In the selling price of the commodities—
  - By non-discriminatory uplift on prime cost (i.e., by adjusting output and prices so that rates of gross profit are reached which are uniform for given categories).
  - By discrimination according to customer (either by reference to the individual—a doctor's patients—or to the nature of his business—domestic and industrial fuel).
  - By a multi-part tariff.
  - By indirect taxation (a compound policy of expediency and of influencing the populace in the sphere of consumption).
- By direct taxation (partial offset may be found in some trading profits—but my guess is that these would be small if Lerner's Rule were used).

I agree with Coase that the multi-part tariff is an excellent device. It can be considered as (1) a variable charge related to the difference between the social cost of taking .001 units and of taking say 100 units of electricity; plus (2) a fixed charge related to the cost of providing the consumer with the .001. By paying for the installation and fixed costs he receives the convenience of being able to turn the switch on. The extent to which he uses this facility is important from a welfare viewpoint only to the extent of the marginal costs involved. Clearly, the marginal incidence of indivisibilities cannot be reckoned with in pricing policy—after all, I might be the consumer who turned the scale in the decision to build Battersea power station.

But multi-part pricing has severe limitations. Even in the public utility field it does not provide a watertight solution. Whilst direct installation costs may be recovered in a fixed periodic charge, there remain the common fixed costs of generation and mains distribution. And this scope for discrimination is, of course, used by supply authorities. To some extent, in spite of the complicated considerations about the incidence of peak loads, the traffic pays what it can bear—doubtless quite rightly so. It is unfortunate that it is never possible to discover exactly how much it can bear if pressed. This multi-part system is useful, but only in a restricted field, and then only as a partial approach to the ideal.

Common Costs

The whole problem lies in this allocation of the burden of common costs. There is no ideal allocation, and what is nearest the ideal for one industry may not be so for another. But I feel confident that they should be recovered in the price of the goods.

Let us compare two industries in two different economies fulfilling the same function but having divergent marginal average cost relationships. One country, let us say, employs nothing but gas for lighting and another is wholly electrified. We may start from a position in which total capacities (measured in therm production) and also total costs are equal. We will further assume that gas is produced in conditions of constant cost, electricity under decreasing costs, whilst demand is such as to equate revenue in each case with total cost. Let us make a final assumption, namely, that in each country ten per cent. of the population live beyond the reach of the gas or electricity services as the case may be. In the gas-lit country marginal cost = average cost = price. No one will doubt that the optimum has been reached here. But in the electrically-lit country, the application of the Lerner Rule would require that electricity supply be expanded, prices being reduced until they were brought down to the level of marginal cost. There would then be a loss in the electrical industry of a size conditioned by the shape of the cost curve. This loss would presumably be met by taxation. But what of the backwoodsmen without the benefits of electrification? A loss falling on the budget can only be spread over all the population, but it is clearly wrong that in the electrically-lit country the backwoodsmen should have to pay more tax than in the gas-lit one. As Coase rightly points out, subsidisation of decreasing-cost industries involves unwarranted transfers of income from non-users to users (p. 176). In this particular case, multi-part pricing will solve this problem, since the electricity industry can be expanded somewhat, and still break even, by charging fixed periodic amounts plus a low rate on consumption. Additional to the fact that we must not run away with the idea that this is a fully logical solution, it must also be remembered that it is one which is obviously of limited application, and which cannot be extended to many of the things we buy, even if they are produced under conditions of diminishing cost.

Cost Accounting

But do not let us lose heart at this. It seems to me that marginal costs will not greatly differ from average costs under public enterprise except in relation to indivisible factors. But, as I have pointed out already, it is not practicable to take account of the widely fluctuating incidence of indivisibilities at different levels of capacity-utilisation and demand. Economists seem to me to have elaborated value theory on the assumption that cost is always known. This assumption is useful as an abstraction, but when we are concerned with practical advice to the government we are no longer justified in retaining it. As an accountant, I have had some experience of cost measurement, and it seems to me that a fair generalisation may be made that though accurate cost accounting is a vital element of efficient administration in business, it does not lead up to figures which can record accurately the divergence of average from marginal cost in the sense in which Lerner uses the latter expression.

Marginal cost of output within the limit of existing capacity (that is, in relation to short-term variations in output) is roughly measurable of course—and generally speaking there is usually a reserve of unutilised capacity in most enterprises. But, except in rare cases, it is altogether impossible to relate the cost of replacing equipment to individual units of output—particularly since output is usually of diverse things. Despite the precision of the economist's intersection of cost and revenue curves, businessmen in private enterprise can have only hazy ideas about the worthwhileness of particular items of outlay.

A particularly significant item of cost at the margin is expenditure on advertising. True to theory, businessmen do have some intention of relating publicity costs to the resulting revenue; but this must be open to a considerable margin of error. In fact, it is not possible, even after the event, to decide whether too much or too little has been spent, unless the results are either spectacularly good or almost disastrously bad. The incidence of publicity costs on the allocation of resources is a study in itself. As they form a fringe of rapidly rising costs at the margin, they are of great significance to the entrepreneur, but, as the consumer's purchase of an article does not involve any social cost under the heading of publicity, social cost and social benefit are liable to diverge considerably. But that is perhaps another question ; the present point is that, somewhat like advertising costs, the marginal significance of many business costs cannot be measured.

In the extractive industries there are such things as payable and non-payable seams of deposits : but for the great mass of industry overhead costs are too big for the incidence of marginality to be measured. Short-term variable costs cannot be the significant factor in price and output policy ; and, as J. M. Clark pointed out, for society as a whole almost all costs are overhead costs. That is another point ; in the economics of private enterprise, materials purchased are an element of variable cost, but in a full-scale integration, or even in relation to the social position, whilst transfers between productive units may be given an accounting value, society does not incur a cost on the mere occasion of a transfer of goods.

Conclusion

I conclude that the golden rule of administration under public enterprise is to fix prices so as to equate demand with current output, and to expand or contract according as there is a profit or loss until price equals average cost. Multi-part pricing should be used where it can, and there are certain instances in which a loss is admissible, namely where there is excess capacity which may as well be utilised if revenue will meet currently-disbursed costs (to the extent that it will, in fact). But this is not an exception to my rule since, in this case of excess capacity, some of the past costs really are bygones for there will be a curtailment of renewal until equilibrium is reached. Current costs need be reckoned as including, in relation to equipment, the cost of renewing only that which, in existing circumstances, it seems likely that it will be worthwhile renewing. It is only the excess capacity costs which are fully " bygones ". All others, including plant renewal costs, are significant—at replacement prices, not, of course, at historical prices. Discrimination is probably administratively admissible only where there is surplus capacity, and does not come into the picture where the optimum has been reached. (It is necessary to remember that some cases of apparent discrimination are not true ones—a unit of electricity at 3 p.m. is not the same as one at 8 a.m. from an economic-cost viewpoint). It may also be theoretically admissible where there is joint production—as indeed there is over most of industry—but it is impossible to apply it accurately. It seems to me that the general equation of price with average cost through adjustments of capacity and output will, despite the arbitrary elements in cost-apportionment, more nearly serve to enable the optimum to be reached than will any other policy. And I suggest that considerations of the nice adjustment of costs and prices are outweighed by the problems of planning and management and of the desirable degrees of central as against local responsibility and control in a system of state enterprise.

Book Reviews

National Income. A Summary of Findings. By SIMON KUZNETS. National Bureau of Economic Research. New York. 1946. 143 pp. $1.50.

This little book consists of analyses of statistics already published and familiar rather than of new material. The main source of Part I (Structure, 1919–38) is Mr. Kuznets' former work, *National Income and Its Composition*, 1919–38, reviewed at length in *Economica*, 1942, pp. 227 *et seq.* But it is more than a recapitulation, for information from other sources is incorporated, tentative suggestions of the probable causes of change during the period are made, and rather involved analytical tables are constructed to emphasize the essential movements. Part II (Long-Term Changes, 1869–1938) is similar to Part I in arrangement, but it depends on less accurate and less detailed estimates from various sources. It is perhaps unfortunate that there are no series of annual statistics but only quinquennial and decennial averages or occasionally comparisons of selected years.

In Part III (Changes during Business Cycles, 1900–38) the statistics are analysed again so as to bring out the magnitude of five fluctuations or ' reference cycles ', with a very useful separation into the effects on various types of production and classes of income.

Part IV (Problems of Interpretation) is of a different character. It contains no statistics, but affords a very interesting analysis of the concept of income and the objects and validity of its measurement. Among the topics discussed is the relationship of gross to net income ; this is shown to be connected with the increasing overlapping of the government and private sectors of service and industry, and with individual expenditure necessitated by conditions of employment. Emphasis is laid on the intrinsic difficulties of comparison of the value of money at different times, in farming and industrial districts, and between different countries. Since prices as well as price-changes vary from one part of the United States to another, a general price-index would be valid only if the proportions in the sectors remained unchanged, which is not the case. In particular on farms and in backward districts the field of unpaid production and service, which has no influence on prices, is or has been much larger than in towns. This consideration is also of first importance, when it is attempted to compare the total income of an industrial with that of an agricultural or backward country.

The conclusion is that measurements of national income are only accurate if it is understood that they contain only that part of real income which is subject to market conditions. Evidently these considerations suggest a great field of further and very difficult work, which is necessary before the far-reaching plans of U.N.O. and other international organisations can be effectively realised. In his few pages, Mr. Kuznets points out this need; perhaps one may hope he will be able in some measure to satisfy it.

A. L. Bowley.

Income from Independent Professional Practice. By Milton Friedman and Simon Kuznets. National Bureau of Economic Research. New York. 1945. xxxiii + 594 pp. $4.50.

In this six-hundred-page monograph Messrs. Friedman and Kuznets do not stop at the collection and analysis of material relating to income from independent professional practice but use their information for the testing of economic hypotheses; indeed, we find Applied Economics at its best. The monograph can best be regarded as a contribution to the realistic study of income differences between individuals, a study which can throw much light on the question whether the assumptions of perfect competition do describe the world we live in, or whether the analysis of income differences should be based on the theory of non-competing groups.

In 1930 about 3 million persons were in professional occupations in the United States, and of these 600,000 were in independent practice. The five leading professions (physicians, dentists, lawyers, certified public accountants and consultant engineers) included 627,000 persons, of whom 309,000 were in independent practice. The present study deals with the incomes of the last mentioned category which consisted of 121,000 physicians, 58,000 dentists, 110,000 lawyers, 10,000 accountants and 10,000 engineers.

The primary material used is that obtained by the Department of Commerce national income studies and is for the years 1929 to 1936. Neither the period nor the sample size are the same for the different professions. For the three main professions the usable sample varied between 1 and 2½ per cent. of the number involved.

The material used for this vast undertaking was, in the reviewer's opinion, meagre. Three points of criticism are put forward: (1) For accountants and engineers the numbers considered are relatively small and represent what is in fact the top of a wider profession. Moreover, the proportions of salaried employees to those in independent practice are large. Hence some of the conclusions relating to these two professions cannot be given the same degree of importance as those relating to the three major professions. (2) The number of years covered does not enable one to distinguish short- and long-term results. It will be noticed that most of the data relate to years of the depression and the conclusions derived might not be valid for other periods. (3) Although the size of the sample is not too small in itself, and the authors were at pains to discuss its various biases, one feels uneasy about the fact that only between one-fifth and one-third of those included in the samples supplied usable returns. Thus virtually nothing is known about the randomness of the sample.

The book opens with a summary description of the five professions, which is excellent and in itself valuable. It is interesting to note that the number of physicians per 100,000 persons, unlike the numbers in most other professions, has declined by about one-fifth since the turn of the century. The professions have increased the restrictions on entry over the last fifty years, these being most severe in the case of physicians, where only 67 per cent. of all those starting as students gained entry and 55 per cent. received licence to practice.

The fundamental problem to be investigated is why professional incomes were, on the average, double or treble the average of other incomes. Careful calculations are made and it is shown that returns in the professions exceed returns elsewhere by more than the extra cost of training. Hence the difference must be accounted for by the scarcity of ability to enter the professions, by the fact that not all those who want to enter the professions possess the necessary capital, and also by the imperfect knowledge of opportunities ; in other words, the professions form a non-competing group.

This argument does not seem to follow from the evidence offered, and the reviewer shares the reservations of Mr. Noyes, a director of the National Bureau, added to the book. No justification was offered for the fact that income-streams are discounted at the market rate of interest, taken as 4 per cent. The crucial argument of the authors is contained in their preface : " The economic stratification of the population is important because capital invested in professional training, unlike capital invested in factories and machines, can rarely be obtained in the open market ; it must be provided by the prospective practitioner himself, his parents or a benefactor ". The emphasis is therefore laid on monopolistic tendencies caused by the fact that not enough persons with ability have the necessary capital.

Instead of discounting income-streams at a given rate of interest, it might have been a better approach to evaluate the rate of return on investment in professional education (that is, the marginal efficiency of capital invested in human ability) and compare this with the rate of return obtained in the nearest lines of investment, such as independent small business, where borrowing is possible. It is the reviewer's impression that the rate of return in the professions would not have been higher than in comparative cases ; it might even have been lower.

Owing to various market imperfections, the rate of return on capital in certain types of business is considerably higher than the market rate ; the main reason is the scarcity of persons who want to start business and who possess the necessary capital. In other words, Messrs. Friedman and Kuznets are probably right if they apply their argument for all business requiring capital ; that is, regard owners of capital as a whole as a non-competing group. The amount of investment is far from being the optimum at the ruling rates of interest. But it is questionable whether the division of that amount of investment between physical capital and professional training is also divergent from the optimum; in fact it is possible that relatively too much is invested in some professional training.

Unfortunately the authors do not mention the possibility of excess capacity in the professions, which can easily come about owing to the fact that the average income of the professions is overestimated by new entrants, the gambling instinct stimulated by the greater inequality of the distribution of professional incomes, and the irrational non-monetary advantages of the professions.[1] Sir William Petty's words are still valid when one observes that the number of lawyers still exceeds the number of physicians, and when one notices a large number of professional incomes which are far too low.[2]

But while the professions as a whole are regarded as a non-competing group, there is competition within the group in so far as new entrants into the professions are fairly free to choose one particular profession. The size of the average income is greatest for engineers, followed by accountants, lawyers, physicians and dentists. The order of relative income dispersion is the same except that accounting falls below medicine. The same conclusions are maintained if averages over a number of years are taken.

The data for lawyers are uncertain, engineers and accountants represent the elite of a larger profession, and so the detailed comparison must be between the two 'curative' professions. It can be taken that ability and knowledge of the market is similar for entrants into medicine and dentistry. Physicians' incomes exceed dentists' incomes by one-third. The difference becomes greater when corrections are introduced for the location of the practice. Differences in the length of training account for about one-half of the total difference. The other half is accounted for by variability of income (greater for physicians), non-monetary factors, influence of demand, barriers to rapid adjustment and difficulty of entry. The explanation offered seems again unsatisfactory. In the first place, no allowance was made for the higher proportion of specialists among doctors. Secondly, the rate of discount used (4 per cent.) was again too low. Allowing for specialists and taking a higher rate of return on the cost of additional training, the difference would be more than explained. Perhaps experience in England can substantiate our case; here the sale of private practices is customary and the difference between the incomes of doctors who can afford to buy a practice and those who cannot indicates a rate of return of 10 to 20 per cent. on the additional capital.

Indeed, the other factors (variability of income and the gambling element, non-monetary advantages, &c.) should, on balance, cancel or even make physicians' incomes less than those of dentists.

---

[1] Rational non-monetary advantages would not be considered as causing excess capacity.

[2] Perhaps Petty's ingenious suggestion to secure the supply of entrants and break the monopoly of the professions may also be considered. (*A Treatise on Taxes and Contributions*, 1662, ed. Hull, pp. 28–9.)

The variability of income within any profession is made possible by the fact that the services sold are not standardized and therefore market imperfections are dominant, reinforced by the variability of income of consumers. Services of doctors are less standardized than of dentists, services of consultant engineers than of accountants ; and there is greater variability in professions selling services to business than in those selling to final consumers since there is a great variability in business resources. But would not the same factors give the explanation of excess capacity existing in some of the professions ?

The rest of the book, its greater part, discusses the causes of income variability, and its conclusions are probably not controversial. Professional incomes on the whole vary with city size. Regional differences, when the effect of city size is eliminated, are small. These variations are greater for the public than for the professions ; this is probably due to aggregating a number of occupations. Perhaps differences in the occupational composition of cities of different size account for some variability in professional incomes through demand effects, especially during the depression when rural incomes declined more than urban incomes. The type of practice accounts for some further differences. It is remarkable that for independent practice mean income is higher, but median income on the whole lower, than for salaried employees ; the degree of skewness in the distribution for independent practice is great. The number of years in practice accounts for some further variation. On the whole income rises with the number of years spent in practice up to a point, beyond which it declines somewhat until retirement. Chance occurrences, which are averaged out over a three-years period, account for some further variability.

The factors studied quantitatively account altogether for one-third of the variation of professional income and the rest, caused by factors like training and ability, remains unaccounted for. But some evidence is offered showing the relation between type of training and income, and also between the class of degree obtained and income.

The stability of relative income status is remarkable especially in the ‘ curative ’ professions. The instability of money incomes is caused by factors affecting all incomes in a profession and it seems that incomes of each size are affected to the same degree. It should, however, be pointed out that, owing to the scarcity of data, the conclusions are established for the short period only, though it is suggested that stability increases somewhat with the length of the period considered.

This review could deal only with the main points and has perhaps not done justice to the book as a whole. Students of income inequality must be impressed by the comprehensive and refined statistical technique used in the book. This technique deserves close study in itself, divorced from the not altogether ideal primary material. If one day our own Inland Revenue releases some of the wealth of data in its possession, there is no doubt that students will scrutinize and make good use of the whole statistical apparatus built up by Messrs. Friedman and Kuznets.

T. Barna.

Changes in Income Distribution during the Great Depression. By Horst Mendershausen. (Studies in Income and Wealth, volume VII, National Bureau of Economic Research. New York. 1946.) xviii + 186 pp. $2.50.

The seventh volume of the series by the Conference on Research in Income and Wealth is devoted to Mr. Mendershausen's monograph dealing with changes in the distribution of incomes in the United States between 1929 and 1933. During 1934 an officially sponsored sample inquiry was carried out in 33 American cities and in the course of this inquiry the total family incomes in 1929 and 1933 were ascertained; these data form the basis of the analysis contained in the present inquiry. Further sets of income distributions in the United States and in Germany were used to test certain hypotheses and to check generalizations derived from the main set of figures.

Mr. Mendershausen's aim was to test the hypothesis that changes in the distribution of income are related to the level of activity. In the first place, the mean incomes of the 33 cities are examined, and it is found that the relative decline in mean income between 1929 and 1933 was less for high-income than for low-income cities; hence the relative disparities between cities increased during the depression. Perhaps it might be worth while to investigate how far this phenomenon is due to the fact that low-income cities are situated in agricultural areas and during a depression price- and income-flexibilities are far greater in agriculture than in industry.

It was further examined whether the inequality of distribution increased or decreased during the depression and the general conclusion is, contrary to previous assumptions, that inequality increased. This simple generalization, however, covers a number of facts; in the upper levels of income inequality decreased, but the differences between the upper and lower groups increased, and the latter movement was dominant. (In other words, by examining the upper ranges of income only, one would arrive at an erroneous conclusion.) There is at the same time a slight increase of inequality within the lower group. These findings can be generalized and a plausible explanation found. In the upper group the top incomes (in the boom), being profit incomes, are flexible, while the bottom incomes, chiefly salaries and also interest and rent, are more rigid. (It will also be remembered that capital gains and losses are treated, in the United States, as income.)

In the lower group the increase in unemployment widens the gap between the top and bottom ranges; differences between skilled and unskilled wage-rates also increase, and the incidence of unemployment is higher among the unskilled than among the skilled. But the dominant factor is the widening gap between the upper and lower groups, that is, those deriving income from salaries or property on the one hand and wage-earners on the other. No doubt this is chiefly due to unemployment which does not affect the well-to-do, and at the same time salary and interest incomes are more rigid than wages.

The most valuable contribution of Mr. Mendershausen is the analysis of individual data establishing a measure of shifts within the income distribution. About 10–15 per cent. of the families rose between 1929 and 1933 from the lower half of the distribution (below the median income) into the upper half in most cities, with a corresponding reverse movement; thus 20–30 per cent. of the families crossed the median. In the various samples the coefficients of correlation between 1929 and 1933 incomes varied from 0.56 to 0.89. It is realized that some shifts are due to non-cyclic factors, such as changes in the structure of the economy or changes in the age of individual earners, but a substantial part of the shifts can safely be attributed to the trade cycle. The probability of moving into another group is greatest, for obvious reasons, in the highest and lowest groups.

Mr. Mendershausen's study suffers, to some extent, from an attempt to give too much information in a continuous story, thus inevitably mixing important arguments and technical detail. But he has forestalled criticisms on other grounds: he explains the limitations of his data and assesses the significance of these limitations, gives a logical explanation of his empirical findings and criticizes his own generalizations. Although his conclusions must be partly inconclusive as shifts in income distributions between 1929 and 1933 could have been caused, for instance, by secular factors, the reviewer feels confident that further investigations would bear out Mr. Mendershausen's evidence. It is only through further investigations based on independent samples that valid generalizations relating to the behaviour of income distributions can be established.

It should be added that Mr. Mendershausen's investigation and comments on his findings are very stimulating and might influence the analysis of other subjects. To give just one example of a line of thought suggested to the reviewer by reading some passages of the book: how far can we estimate the income-elasticity of demand from family budget studies? Expenditure habits are influenced not only by actual income, but also by previous income; the adaptation of expenditure to the new level of income is fairly slow. It follows that the savings of the "nouveau riche" are greater than of the "ancien riche", and the savings of the "nouveau pauvre" less than of the "ancien pauvre"; hence the measure of the marginal propensity of saving obtained from actual family budgets might be excessive, since it is influenced by cyclic fluctuations of the level of activity. The long-run marginal propensity may be considerably lower than the short-run one. The stability in the distribution of income introduced by continuous full employment is likely to diminish the overall propensity to save and thus the maintenance of a high level of employment might become gradually easier as time passes on.

T. Barna.

International Implications of Full Employment in Great Britain. By Allan G. B. Fisher. Royal Institute of International Affairs. Oxford University Press. 1946. 202 pp. 15s.

Professor Fisher in writing this book had the benefit of the advice of a group of economists who prefer to remain anonymous as some of them were in Government service, but he also had the difficult task of trying to obtain their agreement with what he wrote. He succeeded, for the economists were in general agreement, though a comment and a note indicate that some of them would have preferred the emphasis changing slightly. These supplements are interesting as one considers Professor Fisher to have been too cautious with regard to the possibilities of achieving a satisfactory full employment policy and the other thinks that he was not quite cautious enough when advocating the advantages of the open system. The comment indicates confidence in the ability to avoid the pitfalls of full employment by the adoption of " true instead of false employment policies ". The note expresses an opinion that if it could be made acceptable to the United States a " planned " system of international trade, especially for Britain with her dependence on imports, might, at least theoretically, be better than an " open " system.

A book written for a committee has both advantages and disadvantages. It has advantages in that all important aspects of the subject tend to be treated and treated authoritatively ; disadvantages in that emphasis and sometimes unity tend to be lost so that one is left with numerous arguments without guidance as to their relative importances.

Flexibility is treated extensively in the book, repeatedly the analysis returns " to the underlying theme of the importance of the highest possible degree of flexibility in our economic structure " (p. 190) and yet stability in the demand for British exports " is the international requirement of most direct concern for British full employment policy ". (p. 144). Attempts to achieve stability by regional trading blocs often only postpone the need to make adjustments and " In no circumstances can we get any absolute guarantee against the risks of large-scale employment shifts " (p. 168), and yet a successful employment policy not only requires a high level of employment but also " a fairly firm guarantee of the jobs which they (people) already happened to have " (p. 17). When there are such difficulties to reconcile it is unlikely to be possible to reach dogmatic conclusions and Professor Fisher takes a very reasonable attitude.

The note states that " Professor Fisher comes out strongly in favour of an open international economic system " (p. 199). Nevertheless he seems to be also a realist and much of the argument indicates that as a first step he would be content with the freeing of sterling obtained from current transactions to which we are committed from 15th July, 1947, and for a gradual removal of barriers to trade. He says " The re-establishment of an open system is indeed something quite different from the re-establishment of completely free trade, . . " (p. 68) and realises " that our freedom of choice at any . . time is . . limited by many events which have already occurred and cannot be reversed " (p. 159). He cautions " At certain periods of the nineteenth century an observer might have felt that Adam Smith had been over-cautious when he declared that ' to expect that freedom of trade should ever be entirely restored in Great Britain is as absurd as to expect that an Oceana or Utopia should ever be established in it ', but we should certainly be wise to temper in a no less cautious spirit any expectations we may cherish about any new international economic system which we may hope to establish " (p. 43).

My doubts, strangely, are primarily in those aspects of the problem which are assumed to be obvious. We might consider the general attitude towards freer trade and full employment overseas as illustrated by two examples from this book, as follows :—" . . we should certainly find it much easier to get through the difficulties of the transitional period " if there were " . . a general lowering of trade barriers . . " (p. 102), and " There can have been few periods in history when the prosperity of any single country was such an obvious and direct interest of the whole of the rest of the world, as the prosperity of the United States is to-day " (p. 134). These propositions may be true, but they seem to require arguing and some factors suggest they may be false. Freer world trade and high employment overseas will certainly increase world demand and make things easier for exporters. Between the wars we in Britain had a problem of exports with much unemployment in the exporting industries but we were not conscious of any problem of a shortage of imports ; in that period making things easy for exporters might have solved our problem. Now, though we speak of the importance of maintaining a large volume of imports, we do not seem in practice to recognise the fundamental difference in our problem. Increased exports are no longer an end in themselves but a means to the real end of obtaining sufficient imports and we must realise that increasing world demand will make it more difficult for us to obtain imports. A review is not the place to develop this argument fully, but if freer trade and increased demand from, say, the United States increases demand for the primary products such as food and raw materials which are usually in relatively inelastic supply more than for manufactured goods we might easily find our position worsened by freer trade and prosperity in the United States.

H. S. Booker.

A System of National Book-Keeping. By J. B. D. DERKSEN. Cambridge University Press. 1946. viii + 34 pp. 5s.

This is the tenth of the occasional papers published by the National Institute of Economic and Social Research. Its purpose is to provide "in a summarised form the results of investigations that have been carried out recently at the Central Bureau of Statistics, in the Hague, Netherlands, and that until now have not been made available to English-speaking readers". These investigations are centred around what the author calls "the national book-keeping of the Netherlands", which is presented in the form of six accounts—a combined current account for all enterprises, a Government account, separate accounts for consumers' households and for "collective income recipients" (life insurance companies, pension funds, etc.), a foreign exchange account, and a combined capital account. Two such sets of accounts are shown: one for 1938 and the other—in less detail—for the length of the period of the German occupation of Holland, May 10th, 1940 to May 8th, 1945. The greater part of the paper consists of tables setting out these accounts, together with explanations of the points, mainly statistical, which are involved in compiling them. The introduction is slight, and there is little discussion of the principles involved in the tables' construction. Moreover, apart from a few passing observations, little is said about the "merits and limitations" of the tables as far as their use, as distinct from their statistical accuracy, is concerned.

These are puzzling omissions, and do not help towards understanding of the paper. They would have been easier to appreciate had Dr. Derksen presented his paper as a contribution from the Netherlands to the international store of "national accounts" which is at present being built up, and thereby referred his readers to other contributors for a fuller discussion of the subject matter. There is, in fact, much in Dr. Derksen's paper which would lead one to presume this kind of explanation. The form and content of Dr. Derksen's tables, and many of the statistical problems which he has encountered, are familiar to anyone who has studied the British White Paper on *National Income and Expenditure*, or the articles on national income in the American *Survey of Current Business*; "national book-keeping" looks very like an over-literal translation of what would more familiarly be termed "national accounts".[1] There is evidence, however, that Dr. Derksen takes a different view. First, whereas the usual presentation of material of this type begins with national income and expenditure, such an account is excluded altogether from Dr. Derksen's system. Dr. Derksen's method is to break up the economy into as many separate sectors as the data available will allow, and then to set out *seriatim* the separate accounts for each sector. A table of national income and expenditure would involve a combination of accounts, and Dr. Derksen accepts such combinations only as second-best substitutes. He includes a single capital account covering the whole economy, for example, only because the available statistics are insufficient to allow of capital accounts being drawn up for each of the separate sectors into which the current accounts are divided. Secondly, in Dr. Derksen's system each table records all the transactions between the sector of the economy covered and the outside world. The totals of receipts and expenditures, therefore, need have no significance other than that they are the aggregate money values of these transactions. The combined account of all enterprises, for example, includes the value of all Holland's imports on the expenditure side and the value of all Holland's exports on the side of receipts.

---

[1] In the *First Memorandum on the Central Economic Plan, 1946*, published by the Central Planning Bureau of the Netherlands, this work by the Central Bureau of Statistics is in fact referred to as "the national accounts".

There can, of course, be no quarrel with this method of exposition. Indeed, it has the merit of uniformity, which is of great value to anyone else who may want to make use of Dr. Derksen's figures. All the same, it is not necessary to follow Dr. Derksen in regarding it as a superior system to " the breakdown of national income by branches of industry, its allocation by the shares of the factors of production and the expenditure of national income on consumers' goods and services and on net capital formation ", or to agree with him that the latter is not also " an interrelated system of recording " of the main money flows of the national economy. A truer view, it may be suggested, is that they are alternative constructions and to a considerable extent complementary. The White Paper on *National Income and Expenditure*, for instance, has certain points to make and certain particular relationships to bring to the attention of its readers, and only some of its tables are identical with Dr. Derksen's. But all are logical deductions therefrom, and the authors of the White Paper must have had something very like Dr. Derksen's system in mind, even though the published tables are different.

To admit Dr. Derksen's sectional tables as the logical basis for any system of national accounts, however, does not mean that one must be confined to that structure. That it is possible to construct a framework of economic planning on Dr. Derksen's basis and without reference to national income and expenditure, has been too well demonstrated to be disputed[1]; and for expositional purposes, nothing more ingenious could be contrived than the extremely clear chart of money flows which Dr. Derksen appends to his paper. But a substantial part of the planning problem, both at the present time and when the level of employment is threatened, lies in the balancing of claims on real resources against their aggregate supply; and for this purpose, the net national income or product has not been dislodged as the most meaningful basis for measuring what can, or ought to, be done; neither has it as the most satisfactory vehicle for presenting the case to the public.

---

[1] *First Memorandum on the Central Economic Plan, 1946, with Supplement*, The Hague, September, 1946.

Dr. Derksen gives estimates of the Netherlands national income based on "subjective data"—principally income tax returns—from 1900 to 1938. The total for 1938, on this basis, is 5,153 million guilders. To compare expenditure with income, however, one must turn to the "objective" method followed in the national book-keeping tables, which yields a lower figure. On this basis, the national income and expenditure account would appear to be something as shown in the table below. Dr. Derksen does not himself give the "objective" national income estimate, and there are difficulties about certain items. "Interest and dividends" includes interest and redemptions paid to the Government; indirect taxes and tax on dividends are given as a combined figure which has had to be treated wholly as "indirect taxes"; and there is a mysterious item of "other receipts" in the Government account which has been assumed to be re-sales of goods and accordingly netted-off Government expenditure on goods and services. Since, prior to the war, Holland did not have war loans, payment of interest by the Government has been reckoned as a factor payment, not as a transfer payment. A corresponding sum is therefore included in Government expenditure on goods and services, representing payment for the use of property.

	millions of guilders		*millions of guilders*
Wages and salaries ..	2,360	Consumer purchases at market prices	4,050
Rents	592	Government expenditure on goods and services (net)	657
Interest and dividends ..	738	Internal capital investment	768
Entrepreneurial incomes	1,433	Foreign balance	61
		Subsidies *less* indirect taxes	−413
Net national income at factor cost	5,123	Net national expenditure at factor cost	5,123

Dr. Derksen has brought together a valuable collection of data, and his comments on it, and suggestions regarding future work, are full of interest. His national book-keeping estimates for the period of German occupation are a noble effort in the face of serious statistical difficulties. In this section, the table showing the foreign trade account is the most revealing, and is a grim joke.

	milliards of guilders		*milliards of guilders*
Advances to Germany ..	4.3	Export surplus from Holland	1.1
Payments to the German Treasury	2.4	Purchases paid in Reichsmark notes	2.3
		Wages, interest and other services	0.6
		Redemption and securities bought	2.4
		Gold	0.3
	6.7		6.7

Dr. Derksen also estimates that, of the 8,000 million guilders of capital losses (at September, 1939 prices) suffered by Holland during the war, about half consisted of lack of capital maintenance and other capital depletion ; the other half arose from war damage and requisitioning.

R. C. TRESS.

The Economics of Peace. By KENNETH E. BOULDING. New York. Prentice-Hall Inc. 1945. ix + 278 pp. $3.75.

Experience shows that once in the lifetime of every economist there comes a time when he feels an inner urge to announce his views on life in general to the wider public and, single-handed, to stop the world from going to the dogs. After reading Mr. Boulding's book one can only assume that this embarrassing moment must have come for him too. In the 272 pages of *The Economics of Peace* he writes fluently and for part of the way sensibly about a large number of all the economic problems that have been discussed in recent years and throws in an " Appendix on Politics and Morals " for good measure. The result is a book that is neither as original nor as profound as it might have been.

Part I on " The Economics of Reconstruction " rightly says that the post-war task is essentially that of capital-building and describes some of the obvious ways in which this can be done. Mr. Boulding's views in this part on the main problems of immediate post-war relief are also sound though his reference to the " scanty but adequate diet of 3,000 calories per day in Germany in 1919 " would seem to the average German to-day, living on less than half that, a little surprising. The same German might also have some doubts about Mr. Boulding's airy assertion that " the actual physical destruction of World War II as of World War I can be repaired in a few years " or that " military force is a highly ineffective weapon in obtaining economic gains ". Are we really no more effective in war-making than our fathers were ?

Mr. Boulding's idea seems to be that 1939–1945 was merely a somewhat nastier version of 1914–1918. Bearing in mind that the great mistake after the first war was to try to get back to pre-war normality, what we have to do now, he says, is to avoid making that particular mistake again: " Surely, no one is going to want to return to the insecurity and fear of 1939!" To the present reviewer, writing in 1946, this looks distinctly debatable.

Part II is called " The Economics of Reform " (three lots of economics in 272 pages seems rather confusing) and the opening chapter on economic progress contains remarks about the rights of property, non-conformists as innovators, chain-store taxation and other topics which it could be argued have something to do with economic progress. There follows a description in familiar terms of the problem of unemployment as a problem of maintaining aggregate purchasing power. At one point, however, the author makes his argument depend on the questionable proposition that just as any increase in the physical stock of a given commodity may under appropriate conditions of demand elasticity lead to a fall in the value of the stock, " this is also true of commodities in general and accounts very largely for the difficulties of our present time ". He also goes off the rails in criticising the 100 per cent. reserve banking scheme because the banks, being denuded of their interest-earning assets, would have to charge heavily for handling cheque accounts. At present " a considerable proportion of the interest on the national debt really serves as a subsidy to the checking system ". But why should it ?

Mr. Boulding's final chapters on " Right Wing Illusions " and " Left Wing Illusions " promise well but fall short in performance. The 20-page Appendix on " Politics and Morals " is, almost inevitably, unsatisfying. The author has succeeded in writing a book which may be useful to some who are making their first acquaintance with the subjects whilst at the same time creating the impression that he could do better if he tried.

A. S. J. BASTER.

Counter Defensive. By JOHN WADSWORTH. Hodder and Stoughton. 1946. 106 pp. 12s. 6d.

This is a fascinating account of the steps taken by the Midland Bank to adapt itself to the exigencies of war, illustrated with 26 photographs of branches before and after air attack, and a number of other photographs, maps and diagrams.

The preparations described include the transference of the Clearing House to Stoke-on-Trent ; the partial decentralisation of the Bank's own headquarters to four district head offices ; the dispersal of the records of securities away from the branches in which the securities themselves were held ; and an elaborate system of " pairing " of branches, to ensure that essential information to enable business to be carried on would continue to be available, even if a branch was wholly destroyed.

The ensuing tribulations—from bombs to Defence (Finance) Regulations; from call-up to mobilisation of securities—are fully described, and we are given vivid pictures of their effects on the day-to-day working of the organisation. A special chapter details the problems faced by the Channel Islands branches, left to carry on through a German occupation, and without communication with Head Office, for almost five years.

In all, 1,351 reports of war damage to branches of the Bank were received, and 31 branches were completely destroyed, although no strong-rooms were lost. In fifteen cases it was necessary entirely to reconstruct the bank's accounts from duplicate records—a prodigious feat at any time, but infinitely more so when executed in war conditions, with depleted and little-trained staff, often without light, heat or power, and in the midst of the diverse preoccupations of re-establishing business after a heavy raid. The Bank may well be proud of its share in the enterprise and determination which ensured that no British community was ever deprived, throughout the war, of the banking facilities to which it was accustomed.

J. K. Horsefield.

SHORTER NOTICES.

The Theory of Monopolistic Competition. A Re-orientation of the Theory of Value. By Edward Hastings Chamberlin. Fifth Edition. Cambridge, Mass. Harvard University Press. London, Oxford University Press. 1946. xiv + 282 pp. 20s. net.

Quietly revising his fundamental monograph from edition to edition, and occasionally adding as an extra chapter an article contributed to the further discussion, Professor E. H. Chamberlin has gradually expanded his book a good deal and now issues it in a fifth edition which bears the sub-title *A Re-orientation of the Theory of Value.* Apart from the bibliography, already added to the second edition and now grown to 457 items, the paper on "Monopolistic Competition and the Productivity Theory of Distribution" from the *Explorations in Economics* (1933) has been added as chapter VIII and a revised version of the article on "Monopolistic and Imperfect Competition" from the *Quarterly Journal of Economics* (1937) as chapter IX. The new preface stresses still further the differences between the author's approach and Mrs. Joan Robinson's treatment of "imperfect competition".

Britain's Way to Social Security. By François Lafitte. Pilot Press. London. 1945. 110 pp. 6s.

This little book consists of three parts. In the first a sketch of the development of British social services is given, the second describes the proposals put forward by Lord Beveridge in his Report, and their reception by the Coalition Government, whilst the third part deals with targets for Social Security considered desirable by the author. In 110 pages it is difficult to do more than give the very briefest outline of all the complex problems associated with this vast subject, and the treatment is necessarily very simplified. Developments in the field of social security are so rapid nowadays, however, that the book is already out of date in some respects.

Books Received

Agrarian Reforms in Western Countries. The Indian Society of Agricultural Economics. Vora & Co. Ltd., Bombay. 1946. 122 pp. Rs. 3.

Anuario Estadistico de España. XXI. 1944–45. Instituto Nacional de Estadistica, Madrid. 1946. xxxi, 1395 pp.

BASU, S. K.: *Recent Banking Developments.* The Book Exchange, Calcutta. 1946. 262, v pp. Rs. 7–8.

BLOCK, A.: *Estimating Housing Needs.* The Architectural Press. 1946. xiv, 128 pp. 10s. 6d.

BOWLEY, A. L.: *Elements of Statistics.* Sixth Edition. Staple Press Ltd. 1946. xv, 503 pp. 30s.

THE BUREAU OF BUSINESS RESEARCH. Kentucky City Finances. University of Kentucky. 1946. 275 pp.

BURGIN, M.: *Economic Aspects of Argentine Federalism.* Harvard University Press. Oxford University Press. 1946. 304 pp. $4.00. 22s. 6d.

CENTRAL PLANNING BUREAU OF THE NETHERLANDS: *First Memorandum on the Central Economic Plan* 1946 *and National Budget* 1947. The Hague. 1946. 65 pp.

CLARK, G. N.: *The Wealth of England from 1496 to 1760.* Oxford University Press. 1946. 199 pp. 3s. 6d.

D'ANNA, F. C.: *La Ricostruzione Economica e il suo Finanziamento.* Rizzoli Editore, Rome. 1946. 174 pp. L.200.

DEPARTMENT OF RECONSTRUCTION AND SUPPLY, OTTAWA. Economic Research Branch: *Capital, Repair and Maintenance Expenditures of Business Enterprises in Canada.* 1946. 31 pp.
Location and Effects of Wartime Industrial Expansion in Canada 1939–44. 1946. vi, 65 pp.
Manpower and Material Requirements for a Housing Program in Canada. 1946. 137 pp.
Reconversion, Modernization and Expansion. 1946. 105 pp.

DOBB, M.: *Wages.* New Edition. The Cambridge Economic Handbooks. James Nisbet & Co. Ltd. 1946. xvi, 222 pp. 6s.

FEIS, H.: *Seen from E.A.* Alfred A. Knopf, Inc., New York. 1947. xi, 283, vii, pp. $2.75.

FISHER, A. G. B.: *International Implications of Full Employment in Great Britain.* The Royal Institute of International Affairs. 1946. vii, 201 pp. 15s.

Forward from Victory. Victor Gollancz Ltd. 1946. 88 pp. 3s. 6d.

FRANKEL, P. H.: *Essentials of Petroleum.* Chapman & Hall Ltd. 1946. xv, 173 pp. 15s.

GRETHER, E. T. and others: *The Steel and Steel-Using Industries of California.* State Reconstruction and Re-employment Commission. 1946. viii, 408 pp. $1.50.

HALLOWELL, J. H.: *The Decline of Liberalism as an Ideology.* Kegan Paul, Trench, Trubner & Co. Ltd. 1946. xiii, 141 pp. 12s. 6d.

HALPERIN, J.: *Les Assurances en Suisse et dans le Monde.* Editions de la Baconnière, Neuchatel, 1946. 275 pp.

HAWTREY, R. G.: *Bretton Woods.* Longmans, Green & Co. 1946. viii, 142 pp. 7s. 6d.

HOBBES, T.: *Leviathan.* Basil Blackwell. 1946. lxvii, 468 pp. 8s. 6d.

INSTITUT NATIONAL DE LA STATISTIQUE ET DES ETUDES ECONOMIQUES: *Les Chemins de fer en U.R.S.S.* Etudes et Documents. Series A–1. U.R.S.S.1. Presses Universitaires de France. 1946. 77 pp. *Les Minorités Ethniques en Europe Centrale et Balkanique.* Etudes et Documents. Serie B–1. Presses Universitaires de France. 1946. 93 pp.

KEYNES, LORD: *The Balance of Payments of the United States.* Reprint from "The Economic Journal", Vol. LVI, No 222. June, 1946. Macmillan & Company Limited. 16 pp. 1s. 0d.

KNORR, K. E.: *World Rubber and its Regulation.* Stanford University Press, California. Oxford University Press. 1946. x, 265 pp. $3.00 22s. 0d.

KONIG, R.: *Materialien zur Soziologie der Familie.* A. Francke Ltd. Co., Berne. 1946. 179 pp. S. Fr. 12.

KUZNETS, S.: *National Income.* N.B.E.R. Inc., New York. 1946. 144 pp. $1.50.

Land Tenures in India. The Indian Society of Agricultural Economics. Vora & Co. Ltd., Bombay. 1946. 90 pp. Rs. 2.

LEAGUE OF NATIONS. *Food, Famine and Relief.* Economic, Financial and Transit Department, 1940–1946. George Allen & Unwin Ltd. 1946. 162 pp.

LHOMME, J.: *Utilisation, Gaspillage, Prodigalité.* Librairie de Médicis, Paris. 1946. 112 pp.

LOCKE, J.: *The Second Treatise of Civil Government.* Basil Blackwell. 1946. xxxix, 165 pp. 8s. 6d.

LOFTUS, P. J.: *National Income of Palestine 1944.* Government Printer, Palestine. 1946. 47 pp. 100 mils.

LORIMER, F.: *The Population of the Soviet Union.* League of Nations, Geneva. George Allen & Unwin Ltd. 1946. xiv, 289 pp. 15s. 0d.

Made and Printed in England by The Hereford Times Ltd., General Printing Works (T.U.),
London and Hereford. L4230.

Malayan Rubber Policies

By P. T. Bauer

I

1. A recent article in the *Economic Journal*[1] reviewed certain aspects of rubber regulation, notably the treatment of the smallholders. In this paper it is proposed to discuss some implications of the rubber policies pursued in Malaya over the last twenty-five years or so. The smallholders will be prominent in the discussion, but the effects of these policies on the Malayan economy as a whole are also considered. The principal topics reviewed are the cost to smallholders of their under-assessment under two restriction schemes *viz.*: the Stevenson Scheme 1922–28 and the International Rubber Regulation Scheme 1934–42; the new planting and replanting policies and their effects on the position of the smallholders, as well as on the competitive position of the Malayan rubber industry as a whole; the actual outcome of a small concession on new planting in 1939–40; and the treatment of smallholders by the Rubber Research Institute of Malaya. The writer has recently (July–September 1946) had the opportunity of visiting the smallholdings districts of Malaya and some of the information summarised in this article is based on this visit.

II

2. The loss inflicted on Malayan smallholders through their domestic under-assessment under the International Rubber Regulation scheme was estimated in the *Economic Journal* article at over rather than under £10 million or 85 million Straits dollars. This calculation was based on official acreage, production and export figures, and on the price of export rights. The data were derived, as they necessarily had to be, from aggregate Malayan production and acreage figures. When in Malaya, the writer questioned individual Asiatics on the working of rubber regulation, and particularly on the relative assessment of estates and smallholdings. The purpose of these enquiries was solely to ascertain how far the more alert section of the population had understood the operation of restriction, or had appreciated the different treatment of estates and smallholdings. As will be seen, the information gathered tallied closely with the results previously ascertained from published sources. This kind of enquiry could be addressed only to some headmen and rubber dealers, as practically all individual smallholders were ignorant of these matters.

There arose here various complications. First, for restriction purposes, estates were assessed in terms of pounds per acre, while the assessments of smallholdings were expressed in 'units' whose value varied slightly from year to year, so that even a literate and intelligent owner could not be expected to know his assessment, much less to remember it after six years. Moreover, most smallholders and even some dealers and headmen found it difficult to grasp the difference between assessments and exportable amounts (which varied, of course, with the rate of release under regulation). They did, however, generally remember whether their own holdings, or others which they knew, had been classed as A, B, C or D for assessment purposes, and from this the assessments could generally be deduced. There was also present an obvious dilemma. It would have been useless bluntly to ask a headman or a rubber dealer what he thought of the relative assessment of estates and smallholdings of equal productivity. As the interrogator was a recently arrived European personally unknown to him, the headman or dealer would have almost certainly replied either that he did not know, or that areas of equal yielding capacity had received equal assessments. These were, in fact, the answers returned on the few occasions when the question was put in this simple form. If, on the other hand, the question had been prefaced by an assurance that the man could speak his mind freely, this would have turned the query into a leading question. The following method was therefore devised. Questions on the relative assessment of estates and smallholdings were addressed only to the more alert rubber dealers to whom the writer had a personal letter of introduction, or to the more active headmen whom the accompanying rubber instructor (a junior Asiatic official of the Rubber Research Institute of Malaya) appeared to know well. The men were assured that they could speak freely, but that they should not express an opinion unless they could indicate its basis at least roughly. The question was put only to twenty-four non-Europeans outside Kuala Lumpur. Eleven individuals answered the question, eight Chinese and three Malays.

---

[1] P. T. Bauer, "The Working of Rubber Regulation", *Economic Journal*, September, 1946.

They all stated that estates of equal capacity had received higher assessments; when pressed for a quantitative assessment, five said that the difference had been approximately one *pikul* (133⅓ lb.) per acre. Three thought that the difference had been about one restriction class, i.e., that if a smallholding of a given yielding capacity was classed as C for assessment purposes, an estate of equal productivity would have received an assessment corresponding to a class B assessment for a smallholding ; this, incidentally, was roughly equal to one *pikul* an acre, so that these answers were in substance identical, although they were worded quite differently. Two men said that they did not know what had been the difference in assessments, but believed that it had been considerable. The eleventh man said that the difference could not be estimated easily, because the very small, or very poor, holdings had been comparatively leniently treated, and the brunt of under-assessment had been borne by the better holdings. All these men were asked to state the basis of their opinion that the estates had been more favourably treated ; in particular how they were able to estimate what had been the estate assessments in their areas.

In every instance a rational answer was returned: assessments were known through a relative working in an estate office, or through a friend employed on an estate, or the information had been obtained from a member of the assessment committee, or from planters serving as inspectors, or the assessments could be inferred from rubber sales. The question was intentionally addressed only to persons who were a biased sample, being especially alert and intelligent.

It is of interest to note that if the estimate of a difference of about one *pikul* per acre is accepted, and this figure is applied to the average mature acreage between 1934–40, then on the basis of the average rate of release over this period, and of an up-country value of export rights of about 4d. per lb. (the basis of the calculations in the *Economic Journal* article), the loss to the smallholders through under-assessment emerges as about £12 million. This is very close to the original figure of £10 million, which was stated to be conservative.[1]

3. It is also possible to compute roughly the corresponding loss inflicted on smallholders through under-assessment under the Stevenson restriction scheme of 1922–28. During that scheme the total Malayan quota was not divided into two parts for estates and smallholdings, as was done after 1934, but estates and smallholdings were separately assessed on different scales. The average assessment of smallholdings was slightly less than one-half the average assessment of estates; it subsequently transpired that normal yields per acre on smallholdings were substantially higher than on estates. The assessment of fully mature European estates was of the order of 360–400 lb. per mature acre. As the assessment of smallholdings was less than half that of the estates (in spite of the higher productivity of the former), an under-assessment of 180 lb. per mature acre is definitely conservative. The average mature area of Malayan smallholdings during the currency of the Stevenson scheme was about 750,000 acres. The average rate of release over the six years of the scheme was 67 per cent. During that scheme there was no market in export rights, which were non-transferable, but the value of the right to export rubber can be conservatively estimated at 1/2 per lb. Under the international scheme over the years 1934–40 the London price of rubber averaged 8½d. per lb. and the average price of export rights up-country was over 4d. per lb. During the currency of the Stevenson scheme, the London price of rubber averaged 1/7½ per lb., which was extremely profitable, and it is legitimate to assume an average value of 1/2 per lb. for the right to export during the period. Assuming an average value for export rights of 1/2 per lb. over the currency of the Stevenson scheme, an under-assessment of 180 lb. per mature acre, an average mature area for smallholdings of 750,000 acres and

---

[1] At one place in the *Economic Journal* article (p. 396) it was erroneously stated that "smallholders' quotas over the years 1934–41 . . . . .". The calculation referred to the years 1934–40 only, as is clear from the Tables in that article, as well as from the context. If the year 1941 had also been included (for which the data are not so complete), the calculated loss would have been about £2 million (17 million Straits dollars) higher.

an average release of 67 per cent., the loss through under-assessment emerges at £32 million or 270 million Straits dollars.

Adding this figure to the calculated loss under the 1934 scheme, the total emerges as a sum between £40–45 million, or about 370 million Straits dollars. To get these very large figures into perspective, it should be noted that the total allocation to Malaya under the Colonial Development and Welfare Act is about £5 million, or 43 million Straits dollars, with the purchasing power of money now much less than it was in the 1920's and 1930's.[1]

4. In Malaya this treatment of the smallholders is fairly widely known. Some alert and educated Chinese told the writer that it was common knowledge among the educated Asiatics throughout Malaya that the smallholders had been greatly under-assessed. It would have been gratifying to be in a position to dispute this opinion, but it could not be challenged. The following extract from a leading article in the *Straits Times* of 23rd April 1937, serves to illustrate that these indisputable facts were also widely known. "It is useless to shut our eyes to the obvious fact that in the present scheme in Malaya the European-owned estate receives preferential treatment in the matter of assessment, particularly where budded trees are concerned, and that the Asiatic is restricted to maximum assessment of 500 lb., regardless of the possibility of his having the highest yielding trees in the country."

III

5. The planting provisions of rubber regulation were discussed at some length in the *Economic Journal* article already mentioned. It was pointed out that the prohibition of new planting, coupled with a large amount of replanting, jeopardised the whole future of the smallholdings industry. That article dealt, however, with smallholdings generally, without sub-division by territories. As will be seen shortly, the danger to the Malayan smallholders is much greater than would appear at first sight from the data presented in that article. It is necessary to speak in the present tense, since in Malaya the rubber restriction legislation has not yet been repealed, and the planting provisions of rubber restriction are still (February 1947) enforced. This seems to be inconsistent with the official Colonial Office communiqué of 29th December 1943, on the expiry of the International Rubber Regulation Scheme. "They (the British, Dutch and Indian Governments) have, for some time past, been considering the possibility of constituting a new and more widely representative committee for consultation and the collection of information. Such a committee should, in their view, have no powers of regulation on export, production or planting." Formal considerations apart, the continued prohibi-

---

[1] These calculations are intended to indicate orders of magnitude only. If assessments had been equal, the price of export rights would have been different from the actual levels, and in strict logic this should be allowed for in computing the loss to smallholders through under-assessment. It is plainly impossible to estimate this quantitatively.

tion of new planting in Malaya raises certain important practical issues.

6. The area under rubber in Malaya is approximately one-third of the world acreage under rubber. It is obviously most unwise for any territory to embark on a policy of unilateral restriction on the expansion of capacity when it represents only about one-third of the total capacity. It is necessary to examine this policy in its historical setting to appreciate its motives and to assess its probable results.

7. Complete prohibition, or substantial curtailment, of new planting has been a feature of official policy in Malaya since 1922. During the Stevenson restriction scheme from 1922 to 1928 new planting was not prohibited but it was officially discouraged. With very few exceptions no land for rubber planting was alienated (given out to private persons for planting) in Malaya during the currency of that scheme. Lawful new planting was very largely confined to owners of land already alienated but not yet planted with rubber. This was either land planted with other crops, or unplanted land held in reserve. This policy much restricted the scope of new planting in the 1920's. Estates undertook some new planting on unplanted reserve land which many estates had. Smallholders very rarely have unplanted reserve land, and much of the planting they undertook was on land which had been under other products, chiefly under coconuts or under fruit trees. In view of the present world shortage of vegetable oils and the record price of coconuts and copra it is worth reflecting now on the felling of fruit trees and particularly of coconut palms which resulted from the official refusal to alienate land for rubber planting. For the sake of completeness it must be recorded that there was also some illicit planting during the Stevenson scheme, partly on land alienated for purposes other than rubber, or on land to which no titles had been issued. But the ban on the alienation of land for rubber planting was a severe check on new planting, particularly on smallholdings; what new planting there was had to be undertaken largely at the cost of destroying another source of income.

8. After the withdrawal of the scheme applications for the alienation of land for new planting were entertained for two years only, and the land books were closed again for applications in 1930. But even during these two years administrators in many districts were reluctant to alienate land for rubber planting, particularly to smallholders. From 1930 to 1934 new planting was again possible only on land already alienated but not yet under rubber. With the advent of the international restriction scheme in 1934 new planting was prohibited and has remained so ever since with the exception of 1939–40, when producers were permitted new planting up to 5 per cent. of their 1938 acreage.

9. Replanting, the uprooting of the mature trees and their replacement by a new stand, was free until June 1934. From 1934 till December 1938, a large measure of replanting was permitted, though no owner was allowed to replant more than 10 per cent. of

his area in any one year or more than 20 per cent. over the whole period. From 1939 to 1941 replanting was freely permitted, though formal approval had to be obtained from the Controller of Rubber. The planting provisions of rubber restriction apparently remained in force during the Japanese régime and still remain so, though their legal basis is somewhat slender, close on three years after the expiry of the regulation scheme. Moreover, as late as August 1946, the replanting of smallholdings felled during the Japanese occupation was also being discouraged by the authorities in some areas, apparently both on legal and on technical grounds, though there was no statutory basis whatever for this attitude.

10. The official policies of the last 25 years can be schematically summarised as follows :—

SCHEMATIC SUMMARY OF OFFICIAL POLICIES ON LAND ALIENATION AND RUBBER PLANTING IN MALAYA, 1922–46

Period	*Alienation of land for rubber planting*	*New planting*	*Replanting*
1922–28	Hardly any land alienated for rubber planting	Permitted but officially discouraged	Permitted
1928–30	Land alienated with some restrictions, especially on alienation to smallholders	Permitted	Permitted
1930–34	None alienated	Permitted	Permitted
1934–38	None alienated	Prohibited	Permitted with some restrictions
1939–40	For 5 per cent. new planting only	5 per cent. permitted	Permitted
1941–	None alienated	Prohibited	Permitted

There has thus been very little alienation of land for rubber planting in Malaya over the last quarter of a century, especially for new planting by smallholders. A principal aim of this policy has been to protect the high-cost producers (the estates) operating in Malaya with large alien labour forces.

11. Most of these policies were unilateral on the part of Malaya. It was only the prohibition of new planting after 1934 which applied formally to all Eastern territories, and even in this instance it is very doubtful whether the prohibition was effectively policed in the Netherlands East Indies or in Siam. The outcome of these policies was, as could have been expected, a marked deterioration in the relative position of the Malayan rubber industry.

Between the end of 1925[1] and the end of 1940 the area under rubber in Malaya increased from 2,450,000 acres to 3,480,000 acres, while in other countries in the East the increase was from about 2,430,000 acres to approximately 6,780,000 acres,[2] so that the share of Malaya in the total declined over this period from approximately one-half to about one-third. Over this period there were large increases in the planted areas of some of the low-cost territories; in Sarawak from 90,000 acres to 240,000 acres, in Siam from 50,000 acres to 420,000 acres, in French Indo-China from 90,000 acres to 330,000 acres. Most important of all, in the Netherlands East Indies the area under rubber increased during this period from about 1,800,000 acres to close on 4,800,000 acres, with the native area alone rising from about three-quarter million acres to close on 3¼ million acres. Not only did these territories make very rapid headway against Malaya over this period, but the age composition of their planted areas has become much more favourable than in Malaya, with a large proportion of their rubber in the younger age groups.

---

[1] The peak year of the Stevenson boom.

[2] The figures are based on the Statistical Supplement to the *History of Rubber Regulation, 1934–1943* (International Rubber Regulation Committee : Sir Andrew McFadyean ed., 1944) rounded off to the nearest 10,000 acres. The official figure of 3,200,000 acres, casually referred to in a footnote in the *History of Rubber Regulation* (p. 83), has been adopted for the Netherlands East Indies native area instead of the previous figure of approximately 1,800,000 acres.

12. The relative decline of the Malayan rubber industry and of the British section of the rubber industry generally, is illustrated in the following two tables :—

TABLE I

CHANGES IN AREAS UNDER RUBBER, 1925–40
(In thousand acres)

	1925	1940	1940 *as per cent. of* 1925	*Percentage of* 1940 *area over* 15 *years old*
Malaya	2,641	3,481	132	70
Ceylon	497	639	129	74
N.E.I. estates	980	1.567	160	49
N.E.I. natives	750	3,200	425	23
Total N.E.I.	1,730	4,767	275	32
All other territories ..	540	1,370	254	38

TABLE II

CHANGES IN AREAS UNDER RUBBER, 1925–40
(In thousand acres)

	1925	1940	1940 *as per cent. of* 1925	*Percentage of* 1940 *area over* 15 *years old*
Malayan estates	1,559	2,107	135	65
Malayan smallholders ..	1,082	1,374	127	79
Total Malaya	2,641	3,481	132	70
Ceylon estates	321	359	112	82
Ceylon smallholders ..	176	280	159	63
Total Ceylon	497	639	129	74
Borneo estates	69	92	133	70
Borneo smallholders ..	107	280	262	38
Total Borneo	176	372	211	46
British estates	1,949	2,558	131	67
British smallholders ..	1,365	1,934	142	71
Total British	3,314	4,492	136	69
N.E.I. estates	980	1,567	160	49
N.E.I. smallholders ..	750	3,200	425	23
Total N.E.I.	1,730	4,767	275	32
French Indo-China estates	83	311	375	19
French Indo-China smallholders	7	19	275	35
Total French Indo-China..	90	330	365	20

It seems unnecessary to comment at any length on these tables whose implications are only too plain. The comparative position of Malaya and of the Netherlands East Indies, and particularly of the smallholders in these territories, is, however, specially noteworthy. Between 1925 and 1940 the smallholders in Malaya increased their acreage by 25 per cent. and the Netherlands East Indies by 325 per cent.; by 1940 four-fifths of the smallholdings acreage in Malaya was over 15 years old against less than one-quarter in the Netherlands East Indies.

13. To some extent the loss of the predominance of Malaya was inevitable, as no action on the part of the Malayan authorities could have prevented the spread of rubber cultivation in the native areas of the Netherlands East Indies or in Sarawak, Siam or French Indo-China. But the unilateral policies pursued in Malaya were an important contributory factor to this rapid loss of ground. As is well known, the exorbitant prices of the Stevenson scheme were a prime factor in stimulating the sudden vast extension of the native area in Sumatra and Borneo.

14. The political changes which have already taken place in the Netherlands East Indies, and others which are bound to follow, also affect the competitive position of the rubber industries of Malaya and the Netherlands East Indies. For a while the disorganisation in the Netherlands East Indies will strengthen the position of Malaya, but this will eventually be eclipsed by a more permanent factor of great importance. For the first time since its establishment, the native industry in the Netherlands East Indies will cease to be governed by an administration in whose rubber policy the maintenance of the capital value of the European estates was the overriding consideration. In due course this change is bound to affect such matters as restriction on planting, distribution of high-yielding material and the taxation of estates and of native producers. It will probably have a profound bearing on the future of the rubber industry.

15. It is unlikely that more than two years will be required to reach a political settlement in the Netherlands East Indies and in French Indo-China and to restore the comparatively simple inland transport systems of these countries, as well as those of Sarawak and Siam. When this stage is reached excess capacity is likely to develop on a much larger scale than in the 1930's. On any reasonable assumption on the prospective demand for natural rubber over the next decade or so, the demand can be entirely or almost entirely satisfied from these four low-cost producing territories if their mature areas are fully tapped. It is an interesting reflection on the deterioration of the relative position of Malaya (and of Ceylon) over the last two decades that in a few years' time the normal peacetime demand for natural rubber could be met without any contribution from the two territories, which less than twenty-five years ago considered their monopoly position sufficiently strong to operate a

statutory restriction scheme without co-operation from any other territory.

16. The importance and the competitive strength of the Netherlands East Indies native producers is much enhanced by their planting methods. Over large areas in the Outer Provinces of the Netherlands East Indies the natives have for many years past practised a shifting system of hill padi cultivation. They clear a small patch in the virgin jungle or in the *blukar* (secondary jungle) every year or every other year and establish a small padi plot (*ladang*). After taking off one or two rice crops the area is abandoned and a new clearing is opened up which may in turn be an abandoned clearing of previous years. To add rubber to this system costs nothing in effort, cash or displaced alternatives. The rubber seeds are planted simultaneously with the padi; no care is expended on the holding after the rice crop is taken off, and five or six years later a young rubber plantation has grown up ready to be tapped. If in the future high-yielding material is distributed to native producers, these small plantations developed at no cost may yield well over 1,000 lb. per acre. It is also worth noting that less than one-quarter of the Netherlands East Indies smallholdings area was more than 15 years old in 1940, as compared with three-quarters in Malaya. Moreover, the experience of the 1930's has made it clear that a large part of this area can be tapped without the assistance of migrant labour from Java and thus without the comparatively high prices required to induce migration from Java to Sumatra and Borneo. Nor is this competitive threat from the Netherlands East Indies confined to conditions of free competition. If restriction again becomes the order of the day, the Netherlands East Indies administration of the future will sooner or later (and probably fairly soon) stake out a claim for a quota commensurate to the acreage and competitive strength of the native producers.

Some of the advantages of the Netherlands East Indies native producers are inherent in the situation, or are the results of past policies and cannot now be eliminated by any action of the Malayan authorities; the costless planting, the vastness of the native rubber growing districts, the age composition of the Netherlands East Indies native rubber area, and the recent political changes in the Netherlands East Indies are the most important of these advantages.

17. Yet the prospects of Malayan rubber need not be wholly unfavourable. The rubber both from Malayan estates and smallholdings is much better prepared than the Netherlands East Indies native product, which often needs to be processed or reprocessed before shipment to consuming centres; with quantitatively negligible exceptions this does not apply to Malayan rubber. Again, the standards of tapping and cultivation (and possibly also the normal yield per acre) are probably higher on the Malayan smallholdings than they are in the Netherlands East Indies. Another advantage enjoyed by Malaya is the excellence of her communications and the proximity

of the bulk of her rubber areas to the principal ports of shipment; much of the Netherlands East Indies native rubber has to travel long distances and, when not produced close to a river, often over very poor roads before reaching the sea.

Some of these advantages are of minor, or only potential, importance. But, if they were combined with very low cost of production of a large volume of rubber, they might suffice to enable Malaya to produce rubber at a sufficiently low supply price to ensure that a large part of the Netherlands East Indies native area (as well as an appreciable portion of the tappable area of other producing territories) should be kept out of tapping. This can only be brought about by a vigorous policy of new planting, large-scale distribution of high-yielding planting material, liberal alienation of land on easy terms for new planting and encouragement of low-cost producers; in short, by a complete reversal of the present policy.

18. Since the withdrawal of the Stevenson scheme the policy of unilateral restriction has been condemned frequently by high-ranking government officers, as well as by leaders of the planting community. There is an imposing array of emphatic British and Malayan government statements to the effect that no suggestion would be entertained for the restriction of exports, production or planting without co-operation from the other major producing territories, first and foremost the Netherlands East Indies. These statements were based on justified apprehensions, since American cotton and copper, Brazilian coffee and, nearer home, Malayan rubber, have all suffered grievous setbacks through gratuitous assistance given to their competitors by unilateral restrictions. In the face of overwhelming historical evidence, and in defiance of categoric governmental assurances, a policy of unilateral restriction of new planting is again being pursued in Malaya whose planted acreage is now less than one-third of the total area of the principal producing territories, and substantially less than the acreage of the rubber in the Netherlands East Indies, where there is not even nominal control of new planting. The high-cost producers are now being supported by measures which threaten Malaya with economic suicide. At a time when the political troubles in the Netherlands East Indies are presenting Malaya with an unexpected temporary competitive advantage, a policy is being pursued which, so far from exploiting this opportunity, is actually courting disaster.

19. It seems to be believed that the prohibition of new planting is in some way connected with the shortage of food, in particular with the scarcity of rice in Malaya; and that the policy reflects the desire of the authorities not to divert labour and resources from food production to the planting of rubber. This, however, is not so. Replanting is permitted and this requires labour just as much as does new planting. Moreover, heavy manuring is necessary for successful replanting (this is not necessary for new planting), and

this procedure is thus particularly wasteful of resources.[1] Again, negotiations are at present in progress for the resumption of Indian immigration into Malaya, whose successful conclusion would add tens of thousands to the number of food consumers in Malaya who do not themselves produce any food. Thus the prohibition of new planting cannot be justified by reference to the shortage of food.

IV

20. The prohibition of new planting, combined with free replanting, jeopardises the very existence of the smallholdings industry in Malaya. The reason for this can be put quite simply. Replanting, which is feasible and is widely adopted on estates, is, for economic and technical reasons, impracticable on smallholdings. Since 1934 replanting has been permitted, and indeed encouraged, while new planting has been prohibited (with one slight exception of which the Malayan smallholders were unable to take advantage). The gradual replanting of the estate area with high-yielding material, combined with prohibition of new planting has gravely impaired the prospects of the smallholders. In the course of not more than 20 years or 25 years it might have led to the virtual elimination of the smallholders, however efficient they might have been at the outset and however ready to take advantage of high-yielding material. This matter was discussed in the recent *Economic Journal* article. No distinction was, however, made there between the Malayan smallholders and the native producers in the Netherlands East Indies, and accordingly the acute threat to the position of the former, whose rubber is much older, was insufficiently emphasised.

21. It is generally recognised that replanting by Malayan smallholders has so far been on a very small scale. It is clear from the various available data (which it is not proposed to review here) that by 1941 not more than 2 per cent. of the Malayan smallholdings acreage had been replanted, and that replanting by Malay owners or peasant proprietors was negligible. Moreover, as is candidly stated in the 1939 *Annual Report* of the Rubber Research Institute of Malaya (p. 251), much of the small amount of replanting undertaken on smallholdings was unsatisfactory, owing to catch-cropping by smallholders short of cash, lack of manuring, planting with unselected material, as well as for other reasons.

The estates on the other hand had replanted some 9 per cent. of their total acreage by the end of 1940. No figures are available on the area replanted in 1941, but it is known that it much exceeded the figure for 1940, when 49,000 acres or 2½ per cent. of the Malayan estate area was replanted. By the end of 1941 the acreage replanted on Malayan estates was probably around 14–15 per cent. of the 1940 area. Several estates representatives told the writer in Malaya that replanting assumed large proportions only in 1940 and 1941; by the beginning of 1941 several of the larger agency houses had worked out replanting programmes ten years ahead for the replanting of the bulk of the older rubber on the estates under their control. Some 16–17 per cent. of the estate area was felled during the Japanese occupation, and the replanting of most of this area is already envisaged by the agency houses. Even if an appreciable proportion of the acreage replanted is on mediocre or even on poor soil, the superiority of modern high-yielding material over unselected seedlings planted thirty years ago is so great that the heavy replanting by the estates implies a substantial increase in their productive capacity while the smallholders are effectively barred from increasing their capacity.

---

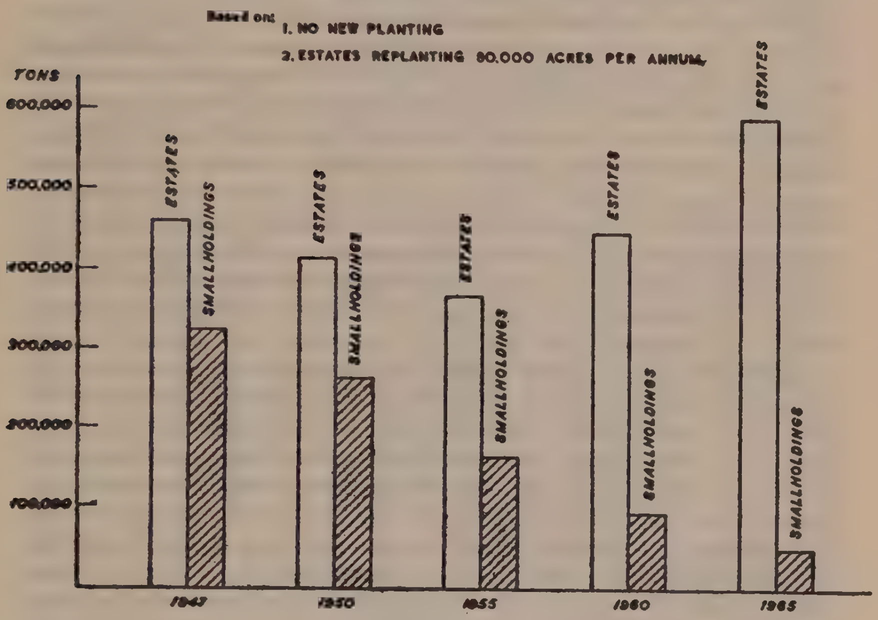
[1] The reason why manuring is required for replanting and not for new planting is briefly this. The annual output of rubber takes almost nothing out of the soil and no manuring is necessary to replace the plant food removed by the annual crop of latex. The growth of the tree and the annual leaf formation make, however, appreciable demands on the soil. The plant food available in most Malayan soils suffices for one stand of trees but is insufficient for good growth of a second stand.

22. The probable outcome of the planting provisions of rubber restriction which are still in force in Malaya emerges from the attached diagram constructed by Mr. W. G. G. Kellett, Statistician of the London Rubber Secretariat. The main assumptions of the diagram, which refers to Malaya only, are these: new planting is prohibited; estates replant annually 80,000 acres or 4 per cent. of the 1941 Malayan estate area; yields on seedling estates already planted average 400 lb. per mature acre, and on budded estates 800 lb. per mature acre; yields on estates to be replanted in the future will rise from 100 lb. per acre at 5 years from planting, to 400 lb. 7 years and to 1,200 lb. 12 years from planting (which is very conservative and particularly for the earlier years is definitely below most current estimates); yields on smallholdings average 600 lb. per mature acre up to 30 years from planting and then gradually taper off until they drop to zero after 40 years. A note by Mr. Kellett on his assumptions is attached to the diagram on opposite page.

The same result can also be shown in a tabular form as in the following columns, which show the prospective decline of Malayan smallholders' capacity on the assumptions of the diagram.

	(tons)		*(tons)*
1947	320,000	1957	130,000
1948	300,000	1958	120,000
1949	280,000	1959	105,000
1950	260,000	1960	95,000
1951	240,000	1961	85,000
1952	225,000	1962	80,000
1953	205,000	1963	70,000
1954	185,000	1964	60,000
1955	165,000	1965	50,000
1956	150,000		

ESTIMATED APPROXIMATE FUTURE PRODUCTIVE CAPACITY OF MALAYAN ESTATES AND SMALLHOLDINGS.



This diagram is based on the following assumptions :—

(*a*) There will be no new planting.

(*b*) Estates will replant with high-yielding material at a rate of 80,000 acres per annum.

(*c*) Yields on existing seedling rubber will average 400 lb. per acre per annum.

(*d*) Yields on existing budded estates will average 800 lb. per acre per annum.

(*e*) The following yields are assumed for estates to be replanted in the future :

Age (*years*)	*Yield* (*lb./acre*)	*Age* (*years*)	*Yield* (*lb./acre*)
5– 6	100	9–10	700
6– 7	200	10–11	900
7– 8	400	11–12	1,100
8– 9	500	12–30	1,200

(*f*) The following yields have been assumed for smallholdings :

Age (*years*)	*Yield* (*lb./acre*)	*Age* (*years*)	*Yield* (*lb./acre*)
7–30	600	36–37	400
30–32	575	37–38	300
32–33	550	38–39	200
33–34	525	39–40	100
34–35	500	40–41	50
35–36	450	Over 41	Nil

23. Thus if the present policy is continued, then on the assumptions of the diagram the smallholdings will be eliminated in about 20 years. The underlying estimates probably understate the physical productive capacity of smallholdings (though the yields assumed are still much higher than the *maximum* assessment under rubber restriction before the war, and *are about treble the average assessment of smallholdings under the Stevenson scheme*), and may also exaggerate the decline in the physical capacity of the smallholdings, but they do not overstate the decline in the competitive position of the smallholders through the absolute and relative decline in the yields per acre on smallholdings against those on estates. Moreover, the yields assumed on replanted areas are definitely conservative and those assumed on smallholdings up to 30 or 35 years of age are reasonably generous. The diagram and the policies whose results it reflects are pregnant with serious implications.

24. It is important to note that even if new planting is permitted, refusal to alienate land may still endanger the position of the smallholders if on estates there is replanting on any scale. If no land is being alienated for rubber, new planting is limited to owners of land already alienated but not yet under rubber, i.e., unplanted reserve land, or land carrying other crops which would be cut down for the purpose. Smallholders very rarely have unplanted reserve land, and most of their new planting could take place only by uprooting of fruit trees or food crops. This they might be unable, or unwilling, to do. Thus, refusal to alienate land for rubber planting has in many instances much the same effect as prohibition of new planting on smallholdings. If meanwhile estates are replanting with high-yielding material the position of the smallholders would be jeopardised in much the same way as it was (and is) by the planting provisions of rubber restriction. Indeed their position might even be worse, as some estates might now plant on their reserve land, as well as replant their existing stands. With brief exceptions, rigid refusal to alienate land for rubber planting has been the official policy since 1922; the implications of this policy, both on the competitive position of Malaya as a whole and on the relative position of estates and smallholdings, do not appear to have been fully appreciated.

V

25. As an exception to the general prohibition of new planting under rubber regulation since 1934 new planting to the extent of 5 per cent. of the 1938 planted acreage was permitted in 1939–40 under the regulation scheme. The Malayan acreage statistics suggest at first sight that this new planting was fully taken up both by estates and by smallholdings. The smallholdings acreage even shows an increase of 8 per cent. from 1,264,678 acres at the end of 1938 to 1,361,128 acres at the end of 1940. This increase must include a substantial acreage revision, since according to the official statistics of the Controller of Rubber and of the Department of Agriculture,

new planting by smallholders totalled only 50,956 acres over this period; some 47,000 acres are stated to have been planted in 1939, and over 3,000 acres in 1940. From these figures it would appear that new planting by smallholders in 1939–40 totalled some 4 per cent. of their 1938 area of just over 1¼ million acres. Over the same period new planting by estates was 112,000 acres or 6 per cent. of their 1938 area. Closer analysis of the new planting statistics and personal observation in Malaya suggest, first, that actual new planting by all owners of 100 acres was almost certainly less than 51,000 acres and, secondly, that new planting by Malays and by resident owners generally was negligible.

26. The 1939 *Annual Report* of the Rubber Research Institute of Malay (p. 252) summarises the approved applications for new planting by smallholders for the eleven months up to and including November 1939. The figures were supplied by the Controller of Rubber and cover all approved applications for new planting of 5 acres or less (i.e. 5 per cent. of 100 acres, holdings over 100 acres being estates). Altogether there were 8,420 applications, totalling 16,649 acres. As approved applications for new planting of 5 acres and less thus totalled only some 17,000 acres, the remaining 30,000 acres of new planting in 1939 must all have been undertaken with the help of purchased planting rights, as the owner of even a 100-acre holding received new planting rights for 5 acres only. Owners who were in a position to plant 10 to 20 acres in 1939–40 with purchased planting rights were smallholders in name only, and probably were not even smallholders in the statistical sense. The figure of 50,956 acres newly planted in 1939–40 almost certainly includes some new planting by Chinese and Chettiar owners of over 100 acres. It very probably also comprises a considerable area of "supplying" (the planting of a few trees on vacant patches within the existing holding), which was freely permitted under restriction and should not have been included in new planting. There may also be other sources of error. New planting by smallholders was thus very probably less than 51,000 acres or 4 per cent. of their 1938 acreage. It was, of course, nowhere near 100,000 acres as would be suggested at first sight by the change in the smallholdings' area from 1,264,678 acres at the end of 1938 to 1,361,128 acres at the end of 1940 shown in the *Malayan Rubber Statistics Handbook*. Even if the figure of 51,000 acres of new planting by smallholders were accurate it would still be misleading, since the Malays and the smaller Chinese holders hardly undertook any new planting. This fact is masked in the statistics of total planting by smallholders but emerges clearly from the figures of applications for new plantings of 5 acres or less, given earlier in this paragraph.

27. The failure of the Malay and of the smaller Chinese owners to use the new planting rights was due to several reasons, one of which was of overriding importance. The planting rights, issued in the form of transferable "share certificates" in denominations and

multiples of one-twentieth of an acre, entitled the owner to plant rubber to the extent of 5 per cent. of his 1938 registered acreage. Thus an owner of three acres would be entitled to plant about one-seventh of an acre, while the owner of a five-acre holding was entitled to plant one-quarter of an acre. These very small areas were whittled down considerably by a remarkable ruling of the restriction authorities by which one-twentieth of an acre was declared to be the equivalent of eight trees, so that one certificate, or unit, entitled the owner to plant eight trees. It is not clear whether this ruling applied throughout Malaya but it was certainly in force over considerable areas. As the smallholders usually plant between 200 to 300 trees per acre, this arbitrary ruling, based on past estate practice (planting is now much denser on estates than it used to be) reduced even further the fractional area which the smallholders were entitled to plant. After the receipt of the share certificates, owners who had no unplanted reserve land (these were the great majority) had to apply to the land offices for the alienation of land on which to carry out new planting. The amounts involved were so small as hardly to be worth a visit to the land offices (often from smallholdings 15 to 20 miles away), and far too small to be worth carrying out new planting any distance from the existing holding of the owner. A smallholder is often prepared to operate a three- or four-acre holding a mile or two away from his house, but he cannot be expected to go far afield to tap or plant 16, 24 or 32 trees. Moreover, if these trees are any distance from his existing holding, it would not be practicable to tap these, as the time lost in walking from one holding to the other (comprising a few trees only) would be prohibitive. Thus this fractional acreage of new planting was of no value to the individual smallholder unless he had unplanted reserve land, or there was unalienated land available bordering on his own holding where he could secure a small plot for planting. Moreover, only those areas could be of use where the new young trees would not suffer from shading or root competition. It was wholly exceptional for these unusual conditions to be fulfilled simultaneously. New planting by the great majority of the smallholders was thus ruled out. Most smallholders who understood the purpose of the certificates therefore sold these or gave them to friends or relatives who might have been in a position to use them.

28. The bulk of the small acreage which according to the official statistics was newly planted by smallholders in 1939–40 was taken up by owners of small estates or of medium holdings of 50–100 acres each and not by resident owners or peasant proprietors with holdings of a few acres each. The figures already quoted of applications for new planting of 5 acres or less in 1939[1] show that these totalled less than 17,000 acres, or less than 1½ per cent. of the smallholdings area, and probably less than 2 per cent. of the acreage of holdings of resident

---

[1] There was scarcely any new planting on smallholdings in 1940; over nine-tenths of the new planting of 1939–40 on smallholdings took place in 1939.

owners. The total number of applications was 8,420, of which 3,033 came from Malays. The average new planting of individual Malay owners was certainly smaller than that of the Chinese or Indian owners, and this would suggest that the aggregate of Malay applications for new planting in 1939 was almost certainly less than 8,000 acres. The total Malay-owned smallholdings area is of the order of 600,000–700,000 acres. It is doubtful whether the Malays and the resident Chinese owners newly planted as much as one per cent. of their 1938 acreage over these years, and it is certain that the figure was less than 2½ per cent. For all holdings under 100 acres new planting in 1939–40 was probably between 3 and 4 per cent. of the 1938 acreage.

29. Many smallholders wasted their planting rights by using these for supplying vacant patches on their holdings. Up to 30 trees per acre such supplying was permitted unconditionally under rubber regulation and was not regarded either as new planting or as replanting, so that it was purely wasteful to use planting rights for this purpose. This was the result of widespread ignorance even among headmen and larger owners of the purpose and use of the share certificates issued in 1939–40. The unfamiliarity with these provisions was in turn an inevitable result of the complex machinery or rubber restriction, and of the failure of the authorities to explain the regulations to smallholders in simple language free from technical legal jargon.

30. To sum up the foregoing paragraphs, it is evident that the 5 per cent. new planting of 1939-40 was of very little use to those smallholders who needed it most, chiefly because individual new planting rights were so small as to render their use impracticable on the smallholdings, and also because no steps had been taken to explain to smallholders the purpose of these certificates. In all probability the smaller owners did not even extend their acreage by one per cent., much less by 5 per cent.

31. Even the very small amount of new planting that actually took place was of doubtful value to smallholders. As was evident from observation and interrogation, much of this new planting was on unsuitable soil, on silted or exhausted fields with a long previous history of food cultivation, or on eroded land or on steep hillside liable to erosion; no assistance was extended to smallholders to help them to improve the soil. Here again personal observation confirmed what could be inferred from easily accessible Malayan publications. For instance, the 1939 *Annual Report* of the Rubber Research Institute of Malaya is unusually explicit on this matter. "Unfortunately much of the land alienated for new planting, in districts where the population is high and cultivation intensive, is poor, either being old silted padi 'sawahs', or other areas where, owing to faulty methods of cultivation in the past, most of the soil has already been washed away . . . (Where virgin land was bought) much of this land is undulating or very hilly and in some instances the slope is so steep that it does not appear practicable to advise the construction of

terraces to minimise soil erosion, owing to the excessive amount of excavation in the solid which would be required to make them."[1]

VI

32. It thus appears that official policy and administrative action over the last 25 years have worked greatly to the disadvantage of the rubber-growing smallholder; and that at present a policy is being pursued which threatens their destruction. Quite apart from the equity of these measures, it should be noted that they adversely affect the competitive position of the Malayan rubber industry and thus of the Malayan economy as a whole, since the smallholders are the low-cost producers. This is not the place for a detailed discussion of the relative competitive strength of the estates and the smallholdings, but the general position is fairly clear.

33. The rubber produced by estates and smallholdings fetches approximately the same price; on estates tapping, weeding and manufacture are carried out by labourers in receipt of a substantial cash wage, with the estates also incurring appreciable costs to provide for the housing and medical care of the estate labourer and for some kind of education for his children; above the labourer there stands the *mandor* (Indian foreman), over the foreman the conductor, who is supervised by the assistant manager, who in turn has a manager above him; on European-owned estates the further steps in the hierarchy include visiting agents, engineers and accountants, the agency house, the secretarial firm, the board of directors and the shareholders. On smallholdings the identical commodity is produced by the owner and his family, assisted perhaps by a few share tappers or contract tappers (workers paid by results), possibly under a Chinese *kepala* (foreman). It is fairly clear which class produces with greater economy of resources and thus more efficiently. There are, of course, estates which could survive even under competitive conditions of free production and planting by all, but this does not affect the broad picture of the competitive strength of the two classes of producers.

VII

34. The attitude of the authorities towards the rubber growing smallholder also raises certain broad social and political issues. This will be appreciated if the social implications of rubber planting by smallholders are considered.

There is a familiar dilemma which often confronts colonial administrators: the choice between efficient but alien methods of production, supported by outside capital, and local, but primitive and inefficient, effort. In plantation rubber this dilemma does not arise. The smallholders in Malaya have held their own against the estates (except for the effects of the planting provisions of rubber restriction), while in the Netherlands East Indies they have made striking progress.

---

[1] *Annual Report* of the Rubber Research Institute of Malaya for the year 1939, p. 250.

Without the two restriction schemes, supplemented in Malaya by severe restriction on the alienation of land for rubber planting, the smallholders would have gained substantial ground at the expense of the estates. Had high-yielding material been made available to the smallholders their progress would have been very rapid.

35. Rubber is a crop ideally suited to the needs of Asiatic smallholders. The technique of production is very simple, and there are no great economies of large-scale operation (except possibly from mechanical clearing of large areas) ; if such economies were substantial the smallholder could not have competed so effectively. The product is highly standardised, easily marketable, and buying competition is generally keen, much more so than for other crops of the Asiatic smallholder. Rubber is also non-seasonal ; thus there is absent the major reason for peasant indebtedness, the need to tide over the cultivator and his family till the harvest is brought in. Moreover, rubber cultivation requires no draught animals, ploughs or manures, which are among the many causes of the notorious indebtedness of the Asiatic peasant. It is thus easy to understand why the smallholder is so attached to rubber-growing.

36. The success of the small grower also raises wider issues. Here is an industry where, statutory restriction practices apart, the small man was able until recently to start on his own and to make a decent as well as an independent living with the possibility of rising to higher levels. This feature of rubber cultivation was frequently emphasised to the present writer in Malaya, generally by Chinese, but also by Indians and even by Malays. Had it not been for the statutory restriction policies prevailing in Malaya almost without interruption since 1922, the number of small and medium owners would to-day be considerably larger than it actually is.

37. One need not be an agricultural sentimentalist to believe strongly that such an extension of small individual ownership would have conduced to the social stability of the country. Such considerations can hardly be adduced in favour of organisations based on a large alien labour force without any stake in the country, and often with only very slender sentimental attachment to Malaya. But for the sustained protection, and indeed preference, granted to the estates there would have been many fewer Indian and Chinese estate labourers in Malay in 1941, and many more Malay, Indian and Chinese owners of smallholdings ; the assimilation of Indian and Chinese smallholders would have been much easier than that of estate labourers. This development would also have served to reduce the great political power wielded by a handful of large firms, which some at least of the administrators outside Kuala Lumpur view with considerable dismay.

38. There is a further important consideration in favour of smallholders' production. Methods have been frequently sought for retaining a larger share of the value of the produce of the colonies in these

territories, as a means for improving the standard of living of the colonial peoples. Rubber production by smallholders meets the case very well; production is highly efficient and the proceeds are wholly retained in the country.

39. The sustained closure of such an important avenue as rubber planting is also bound to have a substantially adverse effect on the industry, energy and resource of the people, especially in Western Malaya, where opportunities for profitable and suitable investment on the part of the rural population are very limited. In particular, it is likely to dampen any tendency of the people to improve their economic position. The importance of this last consideration has been stressed by Professor Raymond Firth in a somewhat different context with reference to the Malay peasantry of Kelantan and Trengganu: "I observed no case in which a good catch one day caused the crew to lay off their net—the result was to increase their keenness to get more, not to diminish it. Among the reasons for this are the range of opportunities for expenditure on consumer goods in the local shops and the avenues for local investment of cash in land, boats and nets."[1]

40. There is also the spread of extremist political movements to be considered. It would be foolish on the basis of a few weeks' visit to dogmatise on the strength of these movements whose offices can now be found in quite small villages. Many of these appear to be mushroom growth, and are indeed of the nature of a stage army. But in some parts of the country, notably in certain areas of Johore and of Perak, they seem to have obtained a foothold, and it is doubtful whether it can be stated with absolute confidence that they will be reduced to insignificance as soon as the shortage of rice and cloth is removed. But whatever view is taken on the actual and prospective strength of the various extremist elements, their power for mischief would be substantially diminished by a reduction in the number of landless agricultural workers, and by an expansion in the number of owners of rubber smallholdings. Such development would decrease the number of people susceptible to such propaganda and increase the number and influence of those likely to resist it actively. There is a section within the communist movement in Malaya whose members are communist in name only and whose main aim is to own some land; these people are kept in the ranks of the communists by the opposition of the authorities to an extension of the smallholdings area.

VIII

41. Centrally organised technical research is of considerable importance in the plantation rubber industry for two different reasons. The first is the comparatively small size of the individual unit of control. In Malaya there is no producer with as much as 3 per cent.

---

[1] *Malay Fishermen: Their Peasant Economy*, p. 96.

of the planted area of that territory; there are only four or five estate producers with over one per cent. of the planted area; the overwhelming bulk of the acreage is in the hands of producers with only a small fraction of one per cent. of the Malayan acreage under rubber. Secondly, the plantation rubber industry is still in its technical infancy. Almost the entire industry is still in its first short period in the Marshallian sense, in that the physical capital first invested has not yet been renewed. Moreover, the great bulk of the planted area has spent almost the whole of its mature life under restriction. Technical progress in the industry has, at times, been very rapid, but the combination of the short history of the industry, the longevity of the trees, and the long spells of restriction on output and planting, has brought it about that some elementary points of planting technique are still undecided. Since the late 1920's or early 1930's, the importance of plantation research has been widely recognised, as also have the possible benefits accruing to different classes of producers from the fruits of competently conducted research. In fact, the assistance derived from the research organisations might, in the long run, be an important factor in the physical productivity and the competitive strength of the various sections of the industry.

42. In Malaya, plantation research has since 1925 centred in the activities of the Rubber Research Institute of Malaya, which is a statutory body financed by compulsory levies on all producers. Before 1941 the Institute was financed from the proceeds of a specific export tax on all Malayan rubber export. At present, its revenue is derived from general taxation, of which the present heavy export tax on rubber is a major item. The Institute thus appears at first sight to be an organisation belonging to, and working for, the Malayan rubber industry. But its designation is a misnomer, and in its activities it is not a Rubber Research Institute of Malaya, but only an Estate Rubber Research Institute. It is proposed to show in this section that only a very small part of the work of the Institute has been concerned with smallholdings; that the officers of the Institute are unfamiliar with smallholders' rubber; and lastly, that the Institute has actually impaired the interests of this class of producer.

43. As a source of revenue, the smallholders have always been a major support of the activities of the Institute. Until the introduction of rubber restriction, some 45–50 per cent. of its revenue came from smallholdings. The advent of restriction reduced the share of the smallholders in the total Malayan output (chiefly through under-assessment; in two years the smallholders were also sellers of export rights to estates), and thus their relative contributions to the revenue of the Institute, which between 1934 and 1940 ranged from 32 per cent. to 40 per cent. Over the decade of the thirties the proportion was about 40 per cent.; in the absence of restriction or with more equitable assessments, the proportion would have been close on one-half. Moreover, for the purposes of the Smallholders' Advisory Service, discussed

below, the Institute used to class as smallholdings all Asiatic estates under 500 acres, and occasionally even all Chinese estates. On this basis over one-half of its revenue was derived from the producers covered by the Smallholders' Advisory Service. At present the bulk of Malayan rubber exports come from smallholdings, and a correspondingly large proportion of the export tax is also contributed by this class of producer.

44. In 1933 the affairs of the Institute were investigated by a small commission presided over by Professor (now Sir Frank) Engledow. After a critical review of existing arrangements, in the course of which it was stated that no advice was available to the smallholders, the Commission recommended the establishment of a Smallholders' Advisory Service within the Institute. This was set up in 1934. But until 1941, only a very minor part of the activities of the Institute was directed towards assisting smallholders. The 1934 *Annual Report* of the Institute barely referred to the smallholders, the 1935 *Report* devoted four out of 160 pages to the smallholders, and by 1939 this had risen to 21 out of 277 pages. Summaries of the budget of the Institute were regularly published in the *Annual Reports*, and from these it appears that in 1934 2 per cent., in 1935 5 per cent., and in 1939 about 10 per cent. of the total expenditure was spent on this service, which, it will be remembered, covered not only smallholdings but in practice all Asiatic-owned properties. Until 1937 no European officer was assigned to the Advisory Service. In that year the personal assistant of the Director supervised the service on a part-time basis. In 1938 one full-time European officer (out of 21) was entrusted with this work. This officer was one of the most junior (possibly the most junior) of the European officers of the Institute.

45. The obvious *prima facie* objection might be advanced that the general work of the Institute benefited the smallholders, as well as estates, and that this vitiates such comparisons as those of the preceding paragraph. This objection is not valid. A large part of the time of the officers of the Institute has always been devoted to advisory work for estates, in the form of visits to estates, analysis of soil and plant samples sent by estates, correspondence with estates, lectures to planters' associations, and showing planters around the experimental station of the Institute. The analysis of the work of each division used to be given in detail in the *Annual Reports* of the Institute, including the proportion of his time devoted by each qualified officer to advisory and to research work; advisory work was generally over one-third of the total. To take a random example: according to the 1937 *Annual Report* (p. 72), officers of the Soils Division of the Institute visited estates on 262 occasions during 1937, and of these visits only 113 were in connection with research work. It is well known in Malaya that many visits of the officers of the Institute have always been concerned merely with routine advisory work devoid of any research interest. Moreover, most of the research work was not

fundamental, but applied or economic research, on such matters as manuring, disease control, replanting and tapping systems, and most of these were of interest to estates only. Lastly, all experiments were carried out on the basis of estate technique and most of the results were of little or no value to smallholders. The objection thus falls to the ground and the comparisons given in the last paragraph are relevant.

It has been argued to the writer by an officer of the Institute that experiments must of necessity be carried out on estates, as no proper control is possible on smallholdings, and that this accounts for the preponderant or rather exclusive interest of the Institute in estates. This does not explain why the advisory work of the European officers has been confined to estates, nor why the research work has been concentrated on problems of interest to estates. Moreover, some experimental work could almost certainly be carried out on smallholdings. At least yield records could be collected from smallholdings on the performance of seedling rubber and of some of the better-known types of budwood. Such records would almost certainly yield material of interest.

46. More remarkable than the somewhat one-sided nature of the activities of the Institute is the unfamiliarity of the officers with the conditions and problems of smallholdings. Here it is possible to quote published and easily accessible material. Lest it be thought that isolated or unrepresentative instances have been chosen, a number of examples will be quoted at some length.

47. In April 1935, the then Head of the Chemical Division of the Institute, who was one of its most senior officers, addressed the Rubber Division of the American Chemical Society on the preparation of Malayan rubber; his views were widely reported in the trade press. This is how this officer described to their main customers the produce of the Malayan smallholders: "The rubber from very small holdings is no better prepared than it was six years ago. It contains, as it always did, dead spiders, leaves, sand, dirt and betelnut juice and is manufactured in a haphazard fashion. Most of it is bought in the United States in the form of Singapore blanket which finds a ready sale".[1] Actually it is Netherlands East Indies native rubber that is sold as Singapore blanket; as is common knowledge in the industry, Malayan smallholders' rubber has always been marketed in sheet form; on the Singapore market it is sold as Chinese smoked sheet. Chinese smoked sheet Nos. 2–4, which are the most representative grades of Malayan smallholders' rubber and which comprise the great bulk of the output from Malayan smallholdings, are generally quoted at prices which are only between 3 and 5 per cent. lower than those of first quality estate ribbed smoked sheet. With the exception of a small quantity of very low grade rubber produced chiefly in the remote areas of Kelantan and Trengganu, the great bulk of Malayan smallholders' rubber was throughout the 1930's sold in Singapore

---

[1] *Bulletin* of the Rubber Growers' Association, September, 1935.

at only 3 to 6 per cent. below good estate rubber, which is sufficient to refute the statement just quoted. These facts and figures can be verified from easily accessible sources, such as the *Malayan Agricultural Journal*, where the percentage of smallholders' rubber sold as smoked and unsmoked sheet respectively used to be stated regularly for all the principal producing areas. The market prices of smallholders' and estate rubber in Singapore were also quoted, and the fine margin between these grades was clearly shown. Through the courtesy of the United Baltic Corporation the present writer was given access to the records of their transactions on the Singapore market in the early 1930's; the prices paid by that firm for Chinese smoked sheet Nos. 2–4 were generally between 3 and 5 per cent. below first quality estate rubber. It remains to be added that the Chemical Division of the Institute was responsible for research into, and advice on, the preparation of Malayan rubber. According to the 1938 *Annual Report* of the Institute, the officer just quoted adjudicated prizes at the Malayan smallholders' rubber competition of that year.

Another remarkable opinion by the same officer can be found in a paper " Brown Bast: Some considerations as to its nature ", in the *Journal of the Rubber Research Institute of Malaya*, Vol. II, 1930; the paper deals with the incidence of this bark disease: " The average smallholding contains infinitely more permanently dry trees than the average estate . . . the smallholding presents fewer brown bast cases because it has so few even reasonably vigorous trees ". This seems to suggest that there was so little disease on smallholdings because most of the trees were already dead. In fact the yield per mature acre on smallholdings at that time exceeded estate yields by 25 per cent. It would be interesting to know the basis of that article. Official enquiries carried out two or three years after its publication found only eight dead out of 9,000 trees examined in the course of the investigation.

48. The views of the Rubber Research Institute on the tapping methods of smallholders are also of interest. Over-tapping and excessive bark consumption always found a place among the few paragraphs devoted to smallholders in the *Annual Reports*. No evidence was ever put forward to support these statements, which were in marked contrast to the findings of an official enquiry into the bark consumption of Malayan smallholdings conducted under the auspices of the Department of Agriculture in 1931–33, when production was not restricted. It was found that bark consumption on the holdings investigated was a small fraction of the usual estimates; that bark consumption was not in excess of the rate of bark renewal, and that bark reserves were ample.

Over-tapping and excessive bark consumption are referred to in the 1936 and 1937 annual reports of the Institute coupled paradoxically with references to rural unemployment caused by sales of coupons. According to the 1938 *Report* (p. 197), " The average smallholder still cares little for the rate at which his bark is being consumed which may be as high as three or four inches per month, and is quite unmoved by warnings as to what may happen if he continues to tap as wastefully as at present ". This last statement would certainly have needed some supporting evidence. In 1938 the rates of release under rubber restriction averaged 55 per cent. only (the lowest during the restriction period), and the smallholders were moreover under-assessed. Their output totalled some 115,000 tons in that year, against 175,000–200,000 tons during the years covered by the official 1931–33 smallholdings enquiry which found *annual* bark consumption to average 4.92 inches on full circumference; the 1938 production equalled about 200 lb. per mature acre, as against 385–465 lb. over the period covered by the smallholdings enquiry. The 1939 *Annual Report* observed (p. 247): "Many tapping panels on smallholdings would, on estate standards, probably be considered untappable ". This might have been so, but was irrelevant, as the economics of estate and smallholders' production are different, and a tree untappable by estate standards may be tappable by a smallholder without cash wage costs. The remark confirms the suspicion that the acquaintance of the Institute with the economics of production on smallholdings was inadequate.

49. By its very nature the statement that the work of the Institute actually impaired the position of the smallholders cannot be proved formally; but there is enough evidence furnished by action and inaction of the Institute to support it. There was the regular annual toll in the form of the specific export tax, whose proceeds were devoted to advisory and research work on behalf of the estates, thus strengthening the competitive position of the latter against the former. More important than the actual taxation of the smallholders for the benefit of the estates was the suggestion inherent in the name, constitution and financing of the Institute that a responsible body was actually looking after the interests of the smallholders, when nothing was in fact done. The development of high-yielding material benefited only the competitors of the smallholders, so that even fundamental research was of little benefit to them; applied research and advisory work was carried out almost solely for estates. While the Institute liberally assisted the estates in their replanting programmes, attention was not drawn to the potentially disastrous results for smallholders of the planting provisions and of the extensive replanting activity of estates. More important still, the statements in the *Annual Reports* of the Institute on the alleged excessive bark consumption on smallholdings served to give credence to views on this subject which gave spurious justification to the under-assessment of smallholdings. Opinions such as those expressed by officers of the Institute and quoted in paragraphs 47 and 48 above, naturally also served to discredit the smallholders and their produce and to lend spurious justification to their severe under-assessment. The most important item under

this heading was, however, the failure of the Institute to make available to smallholders (who, it will be remembered, contributed almost half of its revenue) high-yielding planting material. This is a matter which deserves some attention.

50. The bulk of the small area newly planted or replanted on smallholdings in the course of the last 10 or 12 years was planted with unselected seedling material. It is not easy to explain the failure of the Rubber Research Institute of Malaya to provide high-yielding material for the use of the smallholders from whom some two-fifths of its revenue was derived. In the 1939 *Annual Report* of the Institute a few paragraphs (p. 253) are devoted to this matter; when stripped of the verbiage it becomes clear that nothing was in fact done. One passage is of special interest: "Unfortunately distribution of some of the most valuable clones[1] is restricted owing to the fact that they are owned by private companies who will sell only on the completion of a legal agreement that material will not be multiplied for re-sale. As a result, these clones are not, in general, available to smallholders." This is most misleading. First, the passage does not explain why clonal seed[2] was not made available to smallholders, or why the Institute's own clones were not used for the purpose. But the statement is open to a graver objection. Much the most popular clone, both for new planting and replanting in Malaya, was the celebrated Tj. 1 (Tjirandji 1), while Tj. 16 was also among the six leading clones. Tj. 1 is particularly suitable for planting on smallholdings. It is an excellent all-round clone and its only defect is a slight liability to windbreak. On the densely planted smallholdings this risk is much diminished. All Tj. clones are free and can be multiplied for re-sale. The use of these clones has been advised by the Institute on several hundred occasions and possibly over a thousand occasions; the clones were also used on a large scale on the Institute's own experiments. Those responsible for the *Annual Report*, the most important publication of the Institute, must have known that the Tjirandji clones were free. Accordingly, the passage quoted seems very unsatisfactory, and indeed is not without grave implications.

The following extract from a leading article in *The Planter* (an influential Malayan monthly), June 1930, may serve to illustrate the implications of the failure to make high-yielding material available to smallholders, as well as demonstrating the motives behind the opposition to new planting by smallholders. "In the hands of the producers of budwood lies the decision whether rubber planting will, in the far from remote future, become a native industry, or remain an asset of immense value to those European races to whose administrative skill and financial acumen the development of Malaya and of the Dutch East Indies had been due . . . . it is the honest unbiased opinion of many leading men outside the rubber industry that the less the smallholder has to do with rubber the better will it be in the long run for himself, and for all others engaged in rubber production." These altruistic sentiments have always been out of place, since the smallholders as well as the estates have always paid the specific export tax from the proceeds of which the Rubber Research Institute of Malaya is financed.[1]

---

[1] A clone is the vegetatively propagated offspring of one mother-tree; all such vegetatively propagated offspring of a given mother-tree are of identical genetical constitution.

[2] Clonal seed is the genetically (sexually) propagated offspring of various clones.

51. In their scarcely disguised discrimination against the smallholders the activities of the Rubber Research Institute of Malaya appear to be complementary to Malayan rubber policy generally. In present conditions this not only handicaps the smallholders but also impairs the competitive strength of the Malayan rubber industry, and thus of the entire Malayan economy. The policy of this statutory body is explained partly by the one-sided composition of the Permanent Committee of the Board of the Institute. This is the active part of the governing body, and it controls the finances of the Institute. The membership of the Permanent Committee comprises the Director of the Institute, the Financial Secretary of the Government (whose duties and interests lie far away from rubber research) and three representatives of large estates.

IX

52. It would appear from the foregoing pages that the policies pursued in Malaya, and in particular the maintenance of the planting provisions of rubber regulation, threaten not only to destroy the competitive strength of the Malayan economy and to eliminate the smallholder from rubber production, but also tend to undermine the social stability of the country. This is an excessive price to pay for the continued protection of the high-cost producers.

---

[1] The length to which certain circles are prepared to go to maintain the estates against smallholders also emerges from a letter which appeared in the *Financial Times*, and is reproduced in the *India Rubber World*, September 1930 : " Is it not time the Governments concerned faced the position and prohibited cultivation of rubber by smallholdings ? Briefly, my argument is to eliminate the smallholder by legislation and then introduce a generally accepted restriction scheme. Only by this means can the rubber industry be protected and assisted to better times. The alternative is survival of the fittest, who in the long run is sure to be the native smallholder ".

Complementarity and Substitution in the Theory of Capital

By L. M. LACHMANN

I

COMPLEMENTARITY, introduced into economic dynamics by Professor Hicks in 1939,[1] has since given rise to a host of bewildering and intricate problems. Soon Dr. Lange, in defending the Hicksian view of complementarity against overt criticism by Professor Machlup,[2] had to warn us against confusing the effects of complementarity with those of a " sympathetic shift in demand ".[3] But a few years later the same Dr. Lange relegated complementarity to a scornful footnote.[4] For this he was promptly taken to task by Mr. Harrod, who told us that " in the context of the enquiry, in which we are interested in changes of the prices not of highly specific factors, but of widely employed factors or categories of factors . . . . . the co-operant attribute predominates ".[5] Mr. Harrod also expressed the view that " Factors may be co-operant or alternative to one another. The latter attribute belongs to factors that are very specific. Thus if tool B becomes cheaper it may lead entrepreneurs to have no further use for tool A (which does roughly the same job)."[6] This view plainly contradicts Professor Hicks' statement that " there is a tendency for factors jointly employed in the same firm to be complementary ".[7] There is thus good reason to believe that this is a field in which the wise walk warily.

We may start by recognising with Professor Hicks that goods subject to " sympathetic shifts in demand " will probably be also complementary goods, that " companiable commodities will very usually be complements ".[8] Where the cause of a dynamic change lies on the demand side, the effects of complementarity and companiableness may therefore be almost impossible to disentangle. It follows that if it is our aim to study the effects of complementarity on dynamic change, it will be better to choose as our standard model a case in which the change originates on the supply side. This method we shall adopt in the latter part of this paper.

---

[1] In the realm of statics the theory of marginal productivity is, of course, a set of variations on this theme. In dynamics, on the other hand, most of Professor Hayek's work implies complementarity of different capital resources. What constituted the novelty was the *explicit* introduction of complementarity into dynamics.

[2] *Q.J.E.*, February, 1940, p. 286.

[3] " Complementarity and Interrelations of Shifts in Demand ". *Rev. of Econ. Studies*, October, 1940, pp. 58–63.

[4] *Price Flexibility and Employment*, 1944, p. 9n.

[5] *E.J.*, March, 1946, p. 102.

[6] *Ibid.*

[7] *Value and Capital*, p. 98. Cf. also his *Théorie mathématique de la valeur*, Paris, 1937, p. 49.

[8] " The Interrelations of shifts in demand ", *Rev. of Econ. Studies*, 1944–45, Nr. 31, p. 73.

Next, we have to realise that the traditional treatment of factor complementarity in economic theory has been quite unduly narrow. The standard case discussed is here, of course, the labour-land-capital relationship in the distribution of incomes, Mr. Harrod's " widely employed categories of factors ". But what precisely is our criterion of classification of these categories ? And why cannot complementarity exist within each category ? In this paper we shall endeavour to show that it is in the theory of capital that the concept of complementarity proves a most powerful lamp to throw light into some notoriously dark corners.

II

To reduce that heterogeneous assortment of buses, blast furnaces, telephone kiosks and hotel-room carpets that we call Capital to an intelligible order, to exhibit the design of the pattern into which all of these have to fit, is the chief task of the theory of capital. This is usually done by representing capital as a " stock " or " fund " the component parts of which are units of money value. Our heterogeneous assortment is thus converted into a homogeneous aggregate by using Money value as a common denominator. As Professor Hayek has shown, this becomes impossible under conditions of dynamic change likely to cause relative value changes.

In a homogeneous aggregate each unit is a perfect substitute for every other unit, as drops of water are in a lake. Once we abandon the notion of capital as homogeneous, we should therefore be prepared to find less substitutability and more complementarity. There now emerges, at the opposite pole, a conception of capital as a *structure*, in which each capital good has a definite function and in which all such goods are complements. It goes without saying that these two concepts of capital, one as a homogeneous fund, each unit being a perfect substitute for every other unit, the other as a complex structure, in which each unit is a complement to every other unit, are to be regarded as *ideal types*, pure equilibrium concepts neither of which can be found in actual experience.

In reality we should expect individual capital instruments to be substitutes for some, and complements to some other instruments. Each locomotive, we may surmise, is complementary to a number of wagons, but at the same time a, more or less, perfect substitute for every other locomotive. If this is so, the next question we have to ask is whether, over the field of capital as a whole, complementarity or substitutability is the dominant relationship; or, more precisely, under what conditions we may expect one or the other to predominate. Mr. Harrod believes that among capital instruments substitutability prevails. But we should require further evidence. Enthusiasts of econometrics may well have a dreamy vision of new playgrounds to conquer and new toys to hug, for is this not precisely the kind of situation in which the harassed theorist has to " appeal to the facts " ?

But a little further reflection shows that here, as so often, "the facts" refuse to give a simple answer to our question.

The view that factor complementarity and substitutability are alternative modes of the relationship between factors *in the same situation* rests on a fallacy. There are too many instances of change, of which labour-saving invention is the most familiar, where complements are suddenly turned into substitutes; or, even more intriguingly, in which capital (our supposedly homogeneous stock!) is split into two parts one of which becomes a substitute for, while the other remains a complement to, labour. There are also cases where both relations appear to exist side by side. If a firm has four delivery vans, each delivering goods in a quarter of the town, are they complements or substitutes? According to Professor Hicks they are the former, as "factors jointly employed in the same firm"; according to Mr. Harrod they are bound to be the latter ("doing roughly the same job"). But are they not really both? Furthermore, while locomotives may be substitutes, and locomotives and wagons complements, from the point of view of the time table, the production plan for the railway system as a whole, all trains are complements. But if trains are complements, how can locomotives be substitutes?

These examples go to show that factor complementarity and substitutability are not exclusive alternatives. Factor complementarity and substitution are phenomena belonging to different provinces of the realm of action. Complementarity is a property of means employed for the same end, or a group of consistent ends. All the means jointly employed for the same end, or such ends, are necessarily complements. Factor complementarity presupposes a *plan* within the framework of which each factor has a function. It is therefore only with respect to a given plan that we can meaningfully speak of factor complementarity. Factors are complements in so far as they fit into a production plan and participate in a productive process.

Substitution, on the other hand, is a phenomenon of change the need for which arises whenever something has gone wrong with a prior plan. Substitutability indicates the ease with which a factor can be turned into an element of an existing plan.[1] A change in plan is possible without a change of end. The importance of substitutability lies in that it is usually possible to pursue the same end (output) with a different combination of factors. The importance of complementarity lies in that "technical rigidity" (invariability of the mode of complementarity) may often make it necessary to change the end rather than the means; an existing combination of factors is used to produce a different output.

The change in question must be possible but not predictable. If it were predictable there would be no need for substitution. We should take it into account in drawing up our plan. Here, as elsewhere in the theory of action, predictable change is indistinguishable from any other known element of the situation. The designer of a motor-car is as unlikely to forget the lamps as the mudguard.

---

[1] The factor in question may have to be taken out of another plan, or may be temporarily unemployed, or may be newly created for the purpose.

A production plan involving a large number of factors and with a complex complementarity pattern is particularly vulnerable in case any of them breaks down. We safeguard ourselves against such occurrences by keeping a reserve stock of perfect substitutes for the operating factors (spare parts). We diminish its necessary size by devices calculated to increase substitutability, like the standardisation of equipment. Where the complementarity pattern of the plan is complex, a high degree of substitutability between operating factors and factors held in reserve may be required to keep it going. We have to provide for many minor changes in order to prevent a major one.

We now understand why the locomotives in our example gave us so much trouble. In saying that each locomotive is complementary to so and so many wagons we think of a given production plan (time table). In saying that each is a more or less perfect substitute for every other we are, as it were, turning our mind to an entirely different situation, one in which our original production plan with its allocation of locomotives to trains has been modified. In the first case we think of a given situation, in the second of a change in the situation.

This is not to say, of course, that every change will turn all complements into substitutes. Most factor complementarities, to be sure, can stand up to a number of changes, some of them, like the one mentioned, may outlast almost any change. Our point is merely that every major change is bound to upset some plans and disrupt some complementarities. On the other hand, it is impossible to speak of substitutable factors without defining the kind of change we wish to provide for. One cannot help feeling that the plant bred in the rarefied atmosphere of a static world with a given system of wants, does not stand up very well to the rough climate of a dynamic world which we cannot but study in terms of plans, but in which failure and revision of plans is an every-day occurrence.

It is now clear why factors jointly employed in the same firm tend to be complementary: they are all means to the same end, elements of the same plan. Unity of management here ensures consistency of action.

III

We shall now extend the scope of our analysis from the individual enterprise and its production plan to the economic system as a whole. Shall we now find factor complementarity throughout the system? At first sight one might think that here, where factors are employed, not in one production plan but in many, there can be little or no complementarity. But further reflection shows that this need not be so. A firm, carrying out a plan extending over a period of time, is during that period in equilibrium, as equilibrium means essentially consistency of a number of acts by different individuals, or the same individual. We may now imagine an economic system in equilibrium in the sense that the acts of all individuals, producers and consumers, are consistent with each other, hence so are all production plans. The stationary state is the simplest type of such a system, but generally foreseen change will not affect the essence of the matter. In such an economic system in equilibrium, complementarity will exist between all factors in the system in precisely the same way as in each firm. For where the production plans of all firms fit into a coherent whole, they may, of course, be regarded as elements of one large plan constituted by this whole.

Let us now assume that an unforeseen change throws our system into disequilibrium. Substitution of factors ensues. It is important to realise that while factor substitution destroys one set of complementary relations, another will be created, though possibly of a different mode. If the factor substituted is a perfect substitute for the factor displaced, nothing further need be done. We fit the spare part into the machine, and it continues to run as before. But if the factor substituted is not a perfect substitute, there may have to be an adjustment of other factors. In the former case the new factor merely joins an existing combination, in the latter the *coefficients of production*,[1] the proportions in which the various factors are combined, will have to be altered. A change in the coefficients of production in one firm will, of course, have repercussions throughout the economic system and entail further acts of substitution in other firms. A sequence of changes will permeate the system, affecting prices, output and coefficients of production. But however many subsequent acts of substitution our first act may entail, as long as factors are used together in productive processes there will always be factor complementarity.

What we have said so far about complementarity and substitution applies to factors in general. Now, capital resources are more sensitive to unforeseen change than are either labour or permanent resources, and this marks them out for special treatment. Capital goods are products of the human mind, artefacts, produced in accordance with a plan. Capital gains and losses as effective tests of such plans will therefore affect decisions concerning capital production in a sense in which wage fluctuations, in general, do not affect the birth-rate.

Every capital instrument is designed for a purpose. Where it is highly specific, this purpose is identical with a certain kind of (anticipated) use. Where it is "versatile",[2] it may cover a wide range of uses. But in any case it is planned for *some* kind of use, and failure to succeed in any of them as reflected in loss of earning power will result in revision of plan. At the moment at which a new machine is installed in a factory, one production plan impinges upon another. If the second plan, in which our machine is in use, fails, there will be repercussions on the first kind of plan: fewer such machines will be produced.

---

[1] Walras' "coefficients de fabrication". Cf. his *Éléments d'économie politique pure*, éd. défin., 1926, pp. 211–12.

[2] The term is due to Dr. G. L. Shackle. Cf. F. A. Hayek: *Pure Theory of Capital*, p. 251n.

IV

We have seen that if capital is to be regarded as a homogeneous aggregate, all its constituent elements have to be perfect substitutes. But the complementarity of capital resources (plant, equipment, working capital) is a fact of experience. Hence, if we are to take account of it, we have to give up the "aggregative" conception of capital in favour of a structural conception. But if capital is to be regarded as a structure, what determines its shape? We have to allow for the heterogeneity of different capital resources which now have different functions. But what determines the character of these functions?

The shape of the capital structure is determined by the network of production plans. Each production plan utilises a given combination of factors. The proportions in which factors enter a combination, the coefficients of production, express the mode of factor complementarity in it. More particularly, the proportions in which the various capital resources enter it express the mode of capital complementarity in it, what we shall call the *capital coefficients*. The capital coefficients in each combination are thus the ultimate determinants of the capital structure, at least in equilibrium. In disequilibrium the degree of consistency between plans is a modifying factor.

Strictly speaking, of course, a capital structure in our sense can only exist in equilibrium, where all plans are consistent with each other, and the network of plans displays the firm outline of a clear and distinguishable pattern. But in dynamic reality this structure is in a state of continuous transformation. As production plans prove inconsistent and fail, the outline of our pattern becomes inevitably blurred. Plans have to be revised, new combinations formed, old combinations disintegrate, even those which persist have to undergo an often drastic modification of their factoral composition.[1] In reality the coefficients of production are ever changing. Every day the network of production plans is torn, every day it is mended anew. Under these circumstances we shall find some, at least temporarily, unutilised capital resources while others are scarce. In any case, in the world of our daily experience all unexpected change entails more or less extensive capital regrouping.[2]

The theory of capital has therefore every reason to occupy itself with the network of production plans. It is readily seen how failure of plans affects investment decisions and how, broadly speaking, complementarity serves as an amplifier of *internal* capital change. These phenomena of internal capital change the theory of capital neglects at its peril. Unfortunately, scant attention is paid to them in most of the economic thought of our time,[1] which, as regards capital change, seems almost exclusively preoccupied with problems of investment, i.e., problems of *external* capital change. Interrelations between internal and external changes are almost completely ignored.[2]

---

[1] The revision of plans is the function of the entrepreneur, the carrying out of existing plans is the function of the manager.

[2] Some economic and financial aspects of capital regrouping are discussed in "Finance Capitalism?", *Economica*, May, 1944.

We now must pause for a moment and contemplate our results against the background of traditional capital theory. We have tried to show that a theory of capital based on a notion of homogeneity is bound to miss our problem entirely. It is to a structural conception of capital that we have to look for encouragement and inspiration. But in the sphere of human action Structure implies Function, and Function, where a number of factors is involved, implies co-ordination and complementarity.

Such a structural conception of capital is to be found in the system of Böhm-Bawerk. Contrary to what appears to be a widely held view, Böhm-Bawerk's chief contribution to the theory of capital was not the introduction of *time*, but of *complementarity over time*. Here, to be sure, the " stock of real capital " becomes a flow, but not a homogeneous flow. Its elements, the individual capital goods, are not, like drops of water, perfect substitutes, but each has its place in the flow. If it is true that Böhm-Bawerk's " stock of intermediate products " is essentially a wage fund in motion, we must remember that its different elements move at different speeds.

Hides, leather, and shoes in wholesale stocks, are not just physically similar goods at different points of time, but *products* at different stages of processing. And " processing " requires the existence of a production plan in which complementary factors come into operation in accordance with a time schedule. Time is relevant here as the dimension of processing, the medium of complementarity. Thus, what really matters is not time, but complementarity over time. On the other hand, under the stationary conditions characteristic of Böhm-Bawerk's system all capital instruments in existence at the same point of time are necessarily complements. Thus, whatever their position in time, all capital instruments are linked together by complementarity.[3]

---

[1] Professor Hayek's work is, of course, the outstanding exception.

[2] For example : " The prices of *existing* (author's italics) assets will always adjust themselves to changes in expectation concerning the prospective value of money. The significance of such changes in expectation lies in their effect on the readiness to produce *new* (author's italics) assets through their reaction on the marginal efficiency of capital." J. M. Keynes : *General Theory*, p. 142.

In other words, changes in expectations have no significance for the grouping of existing capital assets.

[3] Böhm-Bawerk's " third ground ", the higher productivity of roundabout processes, lends itself easily to interpretation in terms of complementarity over time.

We may say that within the realm of capital complementarity is an all-pervasive fact, at least as long as equilibrium is maintained. If we regard capital as a complex structure the pattern of which is determined by the proportions in which the various capital resources co-operate in productive processes, it follows that all capital change, including new investment, is bound to modify the structure. Under these circumstances it is difficult to see how there could be " widening ", or even " deepening " of capital. As Professor Hayek has shown, " widening ", i.e., the multiplication of existing equipment, is, for the whole economic system, impossible in the absence of unused resources, while it is possible in some industries at the expense of other industries. " For the economic system as a whole the first of these alternatives is possible only if there is a labour reserve available. But in any particular industry the required additional labour may be attracted from another industry."[1]

Now, as we shall see in the next section, the existence of unemployed labour and unutilised resources is very important for the dynamics of capital, because they provide potential complements for the new productive combinations. But in their absence there can be no capital change which leaves coefficients of production unaffected. " Widening " of capital in some industries must be accompanied by disintegration of existing factor combinations elsewhere. The contrary impression is evidently due to the habit of confining our attention in matters of capital to what happens in a few expanding industries. The notion of capital " widening " is apparently an empirical generalisation of the well known fact that the accumulation of capital as a rule takes the form of successive growth of new industries, and that at each moment a few expanding industries appear to bear the brunt of it. We may accept this empirical generalisation, but the impression that we may safely neglect what happens elsewhere, is nevertheless mistaken. Furthermore, even capital " deepening " is bound to modify not only the coefficients of production as far as labour and capital are concerned, but the capital coefficients. It is hard to imagine cases in which the proportion of capital assets to other factors increases while relative proportions of plant, machinery, tools, raw materials, etc., remain constant.

In other words, there can be no major change which leaves the existing structure and composition of capital intact. All such change tends to create situations in which there is too much of some capital assets and too little of others. In this fact lies the ultimate reason for that instability of the " capitalistic " economy which so many deplore and so few understand.

V

We shall now test the efficiency of the analytical tools we have forged by applying them to a problem which in recent years has become a focus of economic controversy, viz., the effect of the accumulation of capital on profits and the inducement to invest. According to a powerful school of thought this effect is bound to be depressing. As more and more capital is accumulated, investment opportunities gradually become exhausted and the rate of profit declines. "*Other things being equal, the marginal efficiency of capital will be lower the greater the amount of capital goods already possessed.*" (Author's italics.)[1] We shall endeavour to show that the accumulation of capital gives rise to processes which make it impossible for "other things" to remain equal. On the other hand, Professor Hayek has pointed out that there are cases in which investment actually raises the demand for capital.[2] An obvious example would be a copper mine in Central Africa in which we could not even begin to sink capital without having first built a railway from the coast.

---

[1] *The Pure Theory of Capital*, p. 286.

It is clear that the issue hinges on complementarity and substitution. The "depressionists" evidently regard capital as a homogeneous aggregate; each unit of capital is a perfect substitute for every other unit, and accumulation means essentially an addition of further units to a pre-existing homogeneous stock. It is equally evident that Professor Hayek's view is based on complementarity. The "investment that raises the demand for capital" is investment in capital goods complementary to those to be constructed later.

The question now confronting us is, which of the two rival influences, the stimulating influence of complementarity or the depressing effect of substitutability, will on balance prevail within the economic system. At first sight it might be thought that, as complementarity is all-pervasive while substitution will probably be confined to a few expanding industries in which new capital goods are installed, the former influence will prevail. But this would be a premature conclusion based on an unwarranted use of *ceteris paribus* assumptions. For the effect of new capital assets on the capital structure is not confined to those sectors in which they are installed and their immediate neighbourhood. By its effect on the coefficients of production, the breaking-up of existing combinations, and the formation of new ones, the accumulation of capital affects the whole economic system. But its *modus operandi* is gradual, depends in each case on the composition of the factor combinations affected, and is certainly very different from that usually assumed in capital theories based on the notion of homogeneity. We shall illustrate it by an example.

Let us assume that there is an increase of capital in the film[3] industry. More cameras, studio equipment, etc., are produced and installed.

---

[1] J. R. Hicks: "Mr. Keynes' Theory of Employment", *E.J.*, June, 1936, p. 249.

[2] "Investment that raises the demand for capital", *Review of Economic Statistics*, November, 1937. (Now reprinted in *Profits, Interest and Investment*, pp. 73–82.)

[3] It is not necessary to assume that the film industry is the only expanding industry. But we have accepted the empirical generalisation that at each moment current accumulation is likely to show itself prominently in a few expanding industries. What we wish to rule out, and would regard as highly unrealistic, is an increase of capital in all industries in the same proportions.

The greater number of films produced makes it necessary to have more cinemas[1] (complements). As film rentals fall cinema earnings rise. To the extent to which there is unemployed labour and unutilised resources new cinemas will be built. But this may be possible only within fairly narrow limits. The typical location of cinemas is in the central sector of urban areas where as a rule there are no empty spaces. Any considerable rise in cinema earnings, together probably with some decline in the demand for other forms of entertainment,[2] *will thus* cause existing capital equipment to be turned over to new uses. Theatres, ice rinks, dance halls, will be converted into cinemas. Existing factor combinations, house-cum-theatre, house-cum-ice rink, etc., will disintegrate. But while rents earned on such buildings will increase, considerable capital losses will be suffered on theatrical settings and costumes, freezing equipment, and musical instruments. In fact, unless these can be sold to somebody able to fit them into a new combination, they may altogether lose their capital character and become scrap. On the other hand, owners of " free " capital instruments complementary to them are now able to get them at " bargain prices " permitting large capital gains.

The accumulation of capital will therefore have what we may term a " chain reaction " effect. The initial change entails a sequence of subsequent changes as the final result of which the structure of capital becomes modified. The new capital instruments cause the disintegration of existing combinations, increase the earning power of elements complementary to them, and set free those for which they are substitutes. The latter will either lose their capital character or have to seek out other complements, new partners with whom to enter into new combinations. For this they depend on the existence of, at least temporarily, " free ", i.e., unutilised capital goods, or on the breaking-up of other existing combinations. But the disintegration of the latter, by setting free some elements, would again create the same problem. The process will continue until all discarded factors have either found their way to the scrap-heap, or found " free " partners, or found owners willing to wait and hold them until a complement turns up.

This conclusion incidentally throws new light on the vexed problem of " excess capacity ". We now realise that in a world of dynamic change unused resources have two functions. Firstly, they act as shock-absorbers when combinations disintegrate. Secondly, their existence provides an inducement to invest in those captial goods which are complementary to them.

---

[1] We assume that total demand increases *pari passu* with total supply. It is, of course, possible to deduce the depressing effect of accumulation merely from the postulate that total demand falls short of total supply, as " the marginal propensity to consume is always less than one ". But there is no reason to believe that this is *necessarily* so. Cf. A. F. Burns : *Economic Research and the Keynesian Thinking of Our Times* (*26th Annual Report of the Nat. Bureau of Economic Research*, June, 1946, pp. 18–19).

[2] That total demand increases *pari passu* with total supply does not entail that this will be so in every market.

We may therefore conclude that the production of new capital instruments will have different effects on the earnings of different existing capital resources. Those to which they are complements will earn more, those for which they are substitutes will earn less and often nothing at all. To ask what is the effect of the accumulation of capital on "the" rate of profit is to ask a meaningless question, since one of its main effects is to make rates of profit diverge. If in equilibrium it is possible to speak of "a" rate of profit, the accumulation of capital will destroy such equilibrium.

VI

We may now briefly survey the chief results of our enquiry.

Our first result, and the most general, is the inadequacy of static equilibrium methods in the theory of capital which clearly emerges as an eminently dynamic discipline. The concept of complementarity, which originated in a static three-commodity world, with a given system of wants, does not stand up well to its transplantation into the sphere of dynamics, and is not very well suited to the kind of plan analysis appropriate in this sphere.[1] At any rate, factor complementarity and product complementarity cannot be treated on the same level.

Secondly, it is useless to treat capital change as quantitative change in one factor under *ceteris paribus* conditions, when it is plain that at least some *ceteris* will not remain *paria*. What is really needed is a new type of sequence analysis which enables us to follow up, sector by sector, the chain of changes set in motion by the impact of the original change. We may add that this applies at least as much to technical progress as to the accumulation of capital.

Thirdly, *internal capital change*, the regrouping of existing capital resources in response to unforeseen change, emerges as by far the most important topic of capital theory, although in present-day economic thought it is almost completely ignored. Undue preoccupation with mere *external* capital change, like investment, preferably in quantifiable money value terms, in the discussion of which internal repercussions are neglected, is seen to lead us nowhere. Furthermore, the question of the effect of the accumulation of capital on "the" rate of profit and the inducement to invest now appears as a meaningless question. Some profits will rise, some will fall. Unforeseen change always engenders capital gains and losses. It remains a question of some interest, to what extent the expectation of such gains and losses influences the inducement to invest. But in any case the installing of new capital instruments cannot meaningfully be regarded as "growth" of anything concrete or measurable. For it is bound to entail the, at least partial, destruction of some existing capital values.

---

[1] In this respect, the discovery of the fact that "sympathetic shifts", i.e., dynamic demand changes, are liable to throw our whole system into indeterminacy, should have served us as a warning.

Finally, if all this is important for the theory of capital, it is of equal, if not greater, importance to the theory of industrial fluctuations. Perhaps the concept of net investment pure and simple, as chief motor of economic change, has by now yielded us all that it is ever likely to yield. Between 1900 and 1915 economists like Cassel, Spiethoff, and Professor Robertson, basing their conclusions, not on alleged " psychological laws ", but on a study of the actual events of the time, laid the foundations of a theory which takes account of inter-sectional maladjustment as a result of disproportionate growth of different groups of capital resources. The overinvestment theories currently in fashion are now seen to be fallacious. But what are we to substitute for them ? This problem of factor substitution in economic theory will, if we may hazard a guess, occupy economists for many a day to come.

Some Observations on Professor Lange's Analysis

By Vittorio Marrama

1. The reading of Professor Lange's last book on *Price Flexibility and Employment*[1] aroused in my mind three sets of observations which I should like to publish in this paper.

Firstly, I propose to discuss the general assumption, implicit in Professor Lange's analysis, regarding the substitutability among factors of production.[2]

The second set of observations is related to the element of irrationality which is contained in human behaviour. Particularly, I shall try to throw light on the difference between human nature and human thought, and thereby on whether and to what extent it is possible to draw relevant deductions from Professor Lange's analysis.

Finally, I shall consider the net effects of movements of the rate of interest, as one of the allegedly most important conditions of full employment equilibrium.

But before I go on with my observations I shall try to summarise [illegible] Professor Lange's analysis.

I

2. In the first part of Professor Lange's analysis (Chaps. I-IX), with which I am concerned, perfect competition and a [illegible] are assumed. We can split this part into two different sections: (i) the first one in which a static hypothesis is assumed throughout; (ii) the second one in which a dynamic hypothesis is assumed.

Professor Lange's analysis [illegible] the stability of full employment equilibrium in both hypotheses, assuming complete and perfect flexibility of all prices, including, of course, wages.

In the static hypothesis, [illegible]

---

[1] [illegible]

[2] [illegible]

output, owing to the fact that the fall in the price of the underemployed factor lowers the marginal-cost schedule (expansion effect).

But the substitution and expansion effects take place provided only that the prices of the "other" factors and the prices of the goods produced primarily with these factors do not decrease in the same proportion as the price of the factor in excess supply and the prices of the goods produced primarily with this factor. Now we realise that this is the case when the market reacts to a proportionate fall of all prices with a positive monetary effect, that is to say, with a substitution of goods for money.[1] Such a substitution will necessarily take place under the static hypothesis. Let us see why.

If the nominal quantity of money in the economy is constant, its real quantity will increase when there is a proportional fall of all prices. That increase means an excess supply of cash balances. Since the expectations are static and certain, and no different assumption can be made in the static hypothesis, there is no reason for the community to desire to change the real quantity of cash balances. Therefore the excess supply of cash balances comes into the market through a substitution of goods for money (positive monetary effect) which, preventing the prices of other factors and other products from falling as much as the price of the factor underemployed and the prices of the products produced primarily with that factor, allows for the substitution and expansion effects.

Thus for these reasons full employment equilibrium is stable in the static hypothesis, whenever we assume perfect flexibility of all prices.

3. In the dynamic hypothesis, on the contrary, things go quite differently.[2] Though we assume a constant nominal quantity of money, expectations cannot be static and certain, but they will be elastic or inelastic, or, by chance, of unit elasticity, and, moreover, uncertain.

In this case, full employment equilibrium will be stable if we get inelastic expectations; it will be unstable if expectations are elastic. Indeed, the reaction of the market to a proportional fall of all prices (produced by a cut in money wages) depends now also on the elasticity of expectations. We could split that reaction, in the dynamic hypothesis, into two different parts: (1) firstly, we have to answer the question what the monetary effect is that takes place; (2) secondly, we have to answer the question what kinds of effects are likely to be connected with elastic expectations or, alternatively, with inelastic ones.

As far as the monetary effect is concerned, this will be positive, whenever we assume a constant nominal quantity of money. We get an intratemporal substitution of goods for money, as we said before, and, then, the substitution and expansion effects, which induce the restoration of full employment equilibrium. But now we must consider the direction and strength of intertemporal substitution, involved by non-unit elasticity of expectations. The effect of a change of current prices on the total demand and supply schedules depends, therefore, on the algebraic addition of the intratemporal substitution and the intertemporal substitution. The first one is always positive, as we know, in so far as we get a positive monetary effect; the second one, on the contrary, will be negative or positive according to whether the elasticity of expectations is greater or less than unity.

---

[1] We overlook for the time being the substitution of bonds and stocks for money. We shall come to this point later.

[2] The consideration of the stability of full employment equilibrium in the dynamic hypothesis in Professor Lange's analysis has nothing to do with "dynamic equilibrium". The latter means equilibrium over time, as is well explained by the Swedish economists. Therefore the equilibrium in the dynamic hypothesis considered by Professor Lange resembles a static equilibrium, but it also differs from equilibrium in the static hypothesis, in so far as the future is relevant from an economic point of view. It is necessary to bear this distinction in mind in the following analysis, as I never refer to the dynamic equilibrium.

Now, if the elasticity of expectations is less than one (inelastic expectations), that is to say if the individuals expect an increase of prices back to the former level or somewhere in between, an intertemporal substitution of goods for money will take place through a shifting of planned purchases from the future to the present and a shifting of planned sales from the present to the future. We must, then, add this intertemporal substitution to the intratemporal substitution, thus getting a reinforced tendency towards the restoration of full employment equilibrium.

If, on the contrary, the elasticity of substitution is greater than one (elastic expectations), that is to say if the individuals expect a decreasing trend of prices, an intertemporal substitution of money for goods will take place through a shifting of planned purchases from the present to the future and a shifting of planned sales from the future to the present. So we get two opposite forces, the one in favour of restoration of the full employment equilibrium (the intratemporal substitution of goods for money) and the other unfavourable to this restoration (the intertemporal substitution of money for goods). According to which of these forces prevails we get a stable or an unstable full employment equilibrium. Professor Lange's conclusion, which is supported by many other considerations which, for the sake of simplicity, we shall not consider, is that the negative forces will prevail and, therefore, the full employment equilibrium is unstable.[1]

When we introduce the uncertainty of expectations, the conclusions now reached do not change substantially.[2]

Let us now turn to our considerations of Professor Lange's analysis.

---

[1] Professor Friedman's simplification of Professor Lange's analysis, in the *American Economic Review* (Sept., 1946), seems to me too elliptic, in so far as it gives, at least apparently, no relevance to the intratemporal substitution when we consider non-unit elasticity of expectations.

[2] Professor Lange's analysis has been strongly criticised by Professor Friedman (*loc. cit.*) on a methodological basis. Among the other criticisms, he points out that the treatment by Professor Lange of the problem of uncertainty of expectations does not follow the taxonomic approach he uses throughout, in so far as he considers only the case of entrepreneurs treating as certain the most probable price expected out of the probability distribution of expected prices, without taking into account also the case of entrepreneurs planning on the whole probability distribution of expected prices. We cannot disagree with Professor Friedman's criticism in this particular connection, but I do not think it will shake Professor Lange's conclusions at least as far as we do not consider gambler behaviour of entrepreneurs.

II

4. I have to apologise for recalling some elementary notions on the complementarity among factors. Only too often we talk of relations of complementarity or substitutability among factors of production, as seeming to deal with qualifications of the factors themselves. On the contrary it ought to be clearly stated that words like "complementarity" and "substitutability" assume a concrete meaning only if referred or not to a *given* economic structure. In this respect the factors of production may be complementary or substitute; they will be complementary if referred to a given economic structure (by which I mean a given industrial and agricultural structure), they will be substitute if not.

To clear up this point let us draw a simple case. If I propose to become an entrepreneur and I propose, moreover, to produce optical appliances of a particular kind, factors of production must be combined in my enterprise in a given relative proportion. On the other hand, if I propose to become an entrepreneur *tout court*, that is to say without further qualifications, factors of production are entirely substitute and there is only a slight degree of complementarity at the margin, due to the technical impossibility of producing something without labour or without some kind of capital. Clearly, my freedom of action disappears as soon as I begin to carry on my business. Once I have chosen the "field" of my business the factors of production are lumped together with a high degree of complementarity and I can substitute one factor for another only at the margin. Of course, I can change the field of my business and then substitute widely one factor for another, but this change requires *time*. For the moment I face a high degree of complementarity and a low degree of substitutability among factors. Nobody forbids me to change my business prematurely, but this would imply a cost of transformation which will be more or less great according to the structural change I undertake.

The same things seem to apply when we turn to the consideration of the economic system as a whole. The economic system assumed historically a particular structural shape, therefore the real income, which flows annually into our society, can be considered as given, as far as its main composition is concerned. Of course, that composition changes continuously as time goes on, but these changes develop slowly and we can get a substantial variation of the main composition of real income only in the long run. So we can conclude that, in the short run, we have to assume the composition of our real income as given. In these circumstances the factors of production in the economic system as a whole are highly complementary to one another. In order to get that particular real income we have to put in our productive system such and such capital and such and such labour.[1]

---

[1] It is better to make clear that I am mainly concerned with substitution or complementarity between labour and capital, though my argument could be extended, with due qualifications, to the various kinds of labour and capital employed in the process of production.

Of course, we can effect substitutions between capital and labour, even in the short run, but surely on a very narrow scale. Only when we consider the long run is substitution between factors going to become possible on a wider scale, while the degree of complementarity decreases. Indeed, substantial changes of the structure of the economic system are possible in the long run.

We can then say that the *factors of production are complementary in the short run but become substitute in the long run.*

A very simple three-dimensional indifference curve diagram is probably useful to clear up the argument. Let us write on the x-axis and on the y-axis capital and labour respectively, and on the z-axis time (Fig. 1). As we see, in the short period the degree of complementarity between labour and capital is very high; on the other hand, as we go on along the z-axis the relation between them becomes one of substitutability which is almost complete in the last stage.[1]

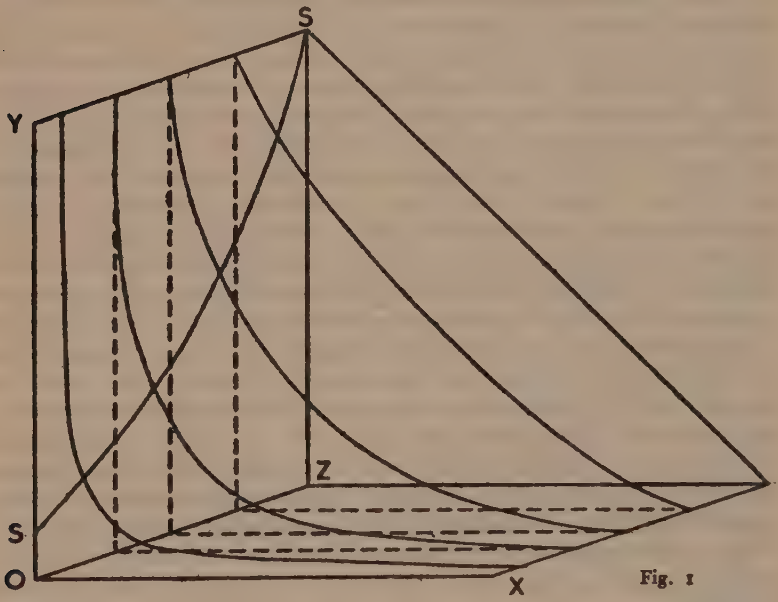


Fig. 1

---

[1] Pareto was the first to represent graphically complementarity with very bent indifference curves and substitutability with very flat indifference curves. Professor Hicks, however, criticises such a graphic representation (*Value and Capital*, p. 42). He writes: "He (Pareto) was able to trace some parallelism between the case when x and y are complementary and that in which the indifference curves between x and y are very bent; between the case when the indifference curves are very flat and that in which x and y are substitutes. But the parallelism is not at all exact, as is made evident at once by the impossibility of discovering what degree of curvature of the indifference curves corresponds to the *distinction* between complementary and substitute goods—which ought on the definition to be a perfectly clear-cut distinction". We cannot disagree with Professor Hicks as far as consumption goods are concerned. But I think that those indifference curves can be used fairly well when we refer to the substitutability or complementarity between labour and capital. In such a case, indeed, there must not be a clear-cut distinction between complementary and substitute factors, because the distinction between complementarity and substitutability is only due to the flow of time.

The surface shaped by the three-dimensional diagram indicates the degree of substitutability between factors over time. We can project the surface on the *yz* plan, getting in such a way a particular curve SS showing on the *y*-axis the degree of substitutability over time. I should say that the second derivative of the substitutability function is greater than zero because it is highly probable that, as time goes on, the degree of substitutability between factors increases at an increasing rate owing to the increasing elasticity of the economic system in its process of transformation.

When we speak in real life about substitution between factors, we sometimes overlook the fact that many things which are possible in the long run are not possible in the short run. From this failure to make clear the distinction between short and long run a lot of confusion arises.[1]

As we saw before, Professor Lange's analysis assumes general substitutability among factors of production. Owing to the fact that his analysis refers to the short run, his assumption cannot be general, is much less general than Mr. Harrod (*loc. cit.*) himself believes. But, apart from this minor consideration, must we infer from the assumption of a high degree of complementarity among factors that Professor Lange's analysis breaks down? I do not think so, provided that analysis is qualified with the following considerations.

5. What is the impact of the complementarity between factors (labour and capital) on the stability of full employment equilibrium?

Suppose, as usual, that this equilibrium is upset by the appearance of an excess supply of labour.

Of course we must exclude the case, considered by Professor Lange, of a drop in the propensity to consume of the community, because in such circumstances, owing to the complementarity between factors, we get excess supplies both of labour and capital of different magnitude according to the section of the economic system affected by the reduction in demand. When that case is considered, Professor Lange's approach is entirely applicable without any further qualification, as the reader can easily prove by himself.

---

[1] When we take into account the aforesaid considerations, many phenomena of the real world, otherwise not understandable, become clearer. So, for instance, we can explain why, nowadays, in many countries, notwithstanding that we get all the conditions necessary for a high level of employment, unemployed persons amount to millions. The scarcity of capital, which would have no effect, at least as far as employment is concerned, if there were relations of substitutability between capital and labour, becomes, on the contrary, the main cause of unemployment owing to the relations of complementarity between factors. In order to solve the problem of unemployment in those countries two alternative ways are open: either (1) increasing the disposal of capital, so as to satisfy its complementarity with labour; or (2) changing the productive structure of the economic system so as to allow for the substitution between factors and to reabsorb the unemployed. Since the latter, apart from other very important disadvantages (such as to lower the real income per head), is a long-run way, while the former is unattainable in countries with a low rate of capital accumulation and heavily damaged by the war, unemployment seems unavoidable, unless those countries succeed in getting a large capitalistic aid from abroad. As far as my country is concerned, these problems are clearly stated by Dr. F. Coppola d'Anna, "E' possibile una politica di 'full employment' in Italia?," *Previdenza Sociale*, July-August, 1946. Dr. Coppola points out particularly the dangers of inflation which a policy of full employment could determine in such circumstances. The same argument we find in the theoricians of full employment. See, e.g., Mr. Kalecki's essay in *The Economics of Full Employment*, Oxford, 1945, p. 43. It remains to us to point out that the solution of the full employment problem is closely connected with a large international trade.

But we are much more interested in the case in which we get only excess supply of labour. How can this happen? The most important and realistic cause of such an excess supply can be the war. War is supposed to break the existing relation of complementarity between factors in those countries in which its weight has been particularly heavy; usually capital is destroyed in a much higher degree than human beings. It follows that after the war those countries have to face an excess supply of labour, while all the other factors are fully employed.[1] What are the consequences of this situation when we assume, as in Professor Lange's analysis, perfect flexibility of all prices?

Of course, the price of the underemployed factor will go down. Therefore the entrepreneurs will be induced to expand their production, but, to this end, they will be obliged to put in more capital. As we know, indeed, only relations of complementarity between factors are relevant in the short run. Since we assumed that capital is fully employed, its price will tend to increase. Owing to these changes in the prices of factors, the marginal cost schedule will change in different measure in the different enterprises, and, namely, will go down in the enterprises which occupy primarily labour, will go up in the enterprises which occupy primarily capital. So we get two opposite effects: (1) an expansion effect in the enterprises of the first group; (2) a contraction effect in the enterprises of the second group. As a result of these opposite effects we get a transfer of capital from the second to the first group of enterprises. But, owing to the complementarity between factors, the second group of enterprises will dismiss some of its workers. If the change in business activity were proportional in the two groups of enterprises, the total demand for labour would be greater, but the total demand for capital less, than before. However, the change in business activity cannot be proportional; of course it will take place to the extent to which it will be convenient. And this limit of convenience is given by the point in which, after some transfer of capital from the second to the first group of enterprises, the total demand for capital will equate the total supply. That means that the change in the business activity of the two groups of enterprises will not be proportional, but the expansion in the first group will be greater than the contraction in the second one.

However, the expansion and contraction effects will take place only if there is a positive monetary effect. We saw before that this effect will automatically happen when the real quantity of money increases. In the case now examined, we do not get a proportional fall of all prices, as was the case when we considered relations of substitutability between factors, but a fall of some prices (enterprises of the first group) and a rise of some others (enterprises of the second group). But we have just seen, implicitly, that the fall is greater than the rise. Therefore, we get a fall in the general level of prices and then a positive monetary effect. Assuming for the moment a static hypothesis and, therefore, static and certain expectations, the intratemporal substitution of goods for money, involved by a positive monetary effect, will give place to the aforesaid expansion and contraction effects, provided, of course, we assume an overall elasticity of demand for goods. Could we then draw the conclusion that, with price flexibility, full employment equilibrium will be restored, even in the case of high complementarity between factors? I think so, provided that we bear in mind that this restoration is *a long-run phenomenon.* It requires indeed a change in the productive structure of the economic system and, in our case, a change towards less capitalistic methods of production.[1] It is not necessary, I believe, to explain why this process takes time. In the meantime, that is to say in the short run, we can presume a high inelasticity of production or, better, of the whole economic structure, so that the price flexibility cannot determine the expansion and contraction effects. Therefore, in the short run, we cannot get a restoration of the full employment equilibrium. But in the static hypothesis what is the meaning of short and long run? Clearly, nothing. In that hypothesis, as we know, the future is not at all relevant as an economic magnitude, but is only a simple mathematical expression. In statics, the future, in its common-sense meaning, does not exist. We use it as a pure third dimension, in order to explain phenomena which are not instantaneous.[2] Therefore, in our case, the distinction between short and long run is quite useless. To say that full employment equilibrium is stable in the long run has no specific meaning; we can say *tout court* that full employment equilibrium is stable.[3]

---

[1] Really, I confess, I have in mind in this connection the story of my country. This is not the case of, say, Great Britain and France. But, I think, it is always justified to bear in mind a real case, however particular it may be, in order to test a theoretical approach. Moreover, we could quote other examples of the same kind, say an earthquake, a new labour-saving technique of production, etc.

Hitherto we have assumed that the demand for the goods produced by the two groups of enterprises is elastic. What if the demand is rigid? Undoubtedly in this case we could not get the expansion and contraction effects, notwithstanding a positive monetary effect. Therefore the "real" situation would remain unaffected. But an overall rigidity of demand is not so normal a case as to be considered at length.

---

[1] Clearly this change in the productive structure of the economic system does not take place when the unemployment is not so large. In such a case, indeed, it would be possible to reabsorb the unemployed through a substitution between factors (which, as we know, always exist at the margin) and without any structural change of the economy. Our analysis holds good when we assume mass unemployment.

[2] This is the reason why Professor P. Samuelson writes: "The problem of stability of equilibrium cannot be discussed except with reference to dynamical considerations, however implicit and rudimentary". ("The Stability of Equilibrium; Comparative Statics and Dynamics", *Econometrica*, April, 1941.) See also J. Von Neumann and O. Morgenstern, *Theory of Games and Economic Behaviour*, Princeton, 1944, p. 44.

[3] Professor Hicks (*Value and Capital*, pp. 71–2, p. 103 *et seq.*) maintains that high degrees of complementarity give rise to the instability of the system; fortunately, he says, high degrees of complementarity are not probable. I think, on the contrary, that high degrees of complementarity between factors are the rule, in the short run, but they do not impair the stability of equilibrium.

6. Just a few words on the dynamic hypothesis.

We saw that in this hypothesis full employment equilibrium will be stable in the case of inelastic expectations and unstable in that of elastic ones. But we already know that the production is inelastic in the short run. Therefore in the case of inelastic expectations we get a restoration of the full employment equilibrium, but in the long run; in the case of elastic expectations we get, on the contrary, a downward cumulative process in the short run and there is nothing possible to say about the long-run developments. But the latter remark is also valid for the case of inelastic expectations. So we must say that in the dynamic hypothesis to speak of a long run is equivalent to talking nonsense; indeed, we can assume unaltered data (*cœteris paribus*) in the short run for the sake of the analysis, but similar assumption in the long run is absolutely unrealistic and therefore we must confine our analysis to the short run, getting the conclusion that full employment equilibrium, in the dynamic hypothesis, is never stable. It is unstable both when the expectations are elastic and when they are inelastic, with this important difference, however: that in the first case we get a downward cumulative process, in the second one some sort of underemployment equilibrium.

Professor Lange's conclusion on the inability of price flexibility as such to restore full employment equilibrium in the dynamic hypothesis is, therefore, confirmed; further, it can be extended to cover the case of inelastic expectations. This extension, of course, applies only to the case in which excess supply of labour emerges, as stated at the beginning.

III

7. Let us now turn to the second set of considerations. I think that the instability of full employment equilibrium due to elastic expectations and flexible prices will be much more evident than in Professor Lange's analysis if we carry on his arguments taking into account the element of irrationality contained in human behaviour.

Certainly I am not considering here, to be quite clear, irrational behaviour, which is outside the scope of the scientific approach, but exactly the kind of irrationality which is *always* contained in human behaviour, however rational people may be.

Human thought (knowledge) can always be reduced to "pure" rationality; human action never. So writes B. Croce in his *Philosophy of the Practical*[1]: "It is true that action is knowledge, will and wisdom, that is to say, in the sense that willing and acting presuppose knowledge and wisdom. In this sense, and considered solely in the stage of the cognoscitive investigation which will form the base of action, the deliberation is a theoretical fact. The customary expressions of logical, rational, judicious actions, are metaphors, because action may be weak or energetic, coherent or incoherent; but *it will not have those predicates which are proper to theoretical acts that precede actions*, on which the metaphors aforesaid are founded" (italics mine). In my understanding of the matter, what all this amounts to is that between thought and action there is a "gap" due to the fact that while knowledge means to know the given facts and to reason upon them with the universals, action, on the contrary, means will of the unknown. It seems that this definition of the human action is at variance in too paradoxical a manner with the sayings, so clearly evident, that *voluntas quæ non fertur in incognitum* and *ignoti nulla cupido*. "But," writes B. Croce, "those sayings are true only so far as they confirm the fact that without the precedence of the theoretical act, the practical act does not take place. Apart from this signification, it should rather be maintained that *noti nulla cupido* and that *voluntas non fertur in cognitum*. What is known exists, and it is not possible to *will the existence* of what *exists*; the past is not a content of volition. The will is the will of the unknown, that is to say, is itself, which, in so far as it wills, does not know itself, and knows itself only when it has ceased to will".[1]

---

[1] B. Croce, *Philosophy of the Practical; Economic and Ethic*: Engl. trans. by D. Ainslie, Macmillan, London, 1913, pp. 40–41.

Therefore, if it is true that the stochastical approach makes the action the result of a rational calculus, this does not mean that the action is rational in itself. Indeed, the action, owing to its own nature (will of the unknown), always contains a margin of irrationality, which is more or less large. Individuals know very well that, even if they have perfect knowledge of the given facts, at the very moment of their action they step into the future, which is so rich in new facts as to upset their plans. Professor Demaria, deriving particularly from such French philosophers as Bergson, Boutroux, etc., is trying to develop a dynamic theory on the aforesaid unknown, which he calls "dynamical indetermination".[2] Individuals, of course, cannot overlook this dynamical indetermination, they live in this atmosphere of uncertainty, which is after all life itself. Although the stochastical approach helps them to neutralise that uncertainty when they draw their plans "on paper", a "residual" doubt (what Croce calls "the shadow of mystery") will remain at the very moment of their action. Individuals can act in real life only if they renounce the "complete" rationality of their actions; otherwise they would never act. At the very moment of their actions, they must allow for other inducements like intuition, hope, belief, etc. The nature of these inducements is, of course, not rational, but psychological and eventually irrational. To sum up, therefore, human actions contain always a margin of irrationality.

---

[1] *Loc. cit.*, pp. 50–51.

[2] See, particularly: "Le basi logiche dell' economia dinamica nel clima scientifi coodierno," *Giornale degli Economisti*, 1939, p. 51, and *Principi generali di logica economica*, Milano, 1944, p. 42. Professor Demaria speaks also of a "logical indetermination" due to the imperfect knowledge of the given facts, which we overlooked on the assumption of perfect free competition. Attention must be recalled to an essay by Professor G. Di Nardi ("Interdipendenza e indeterminazione dinamica nella teoria economica", *Giornale degli Economisti*, Nov.-Dec., 1941, and Jan., 1942) in which interesting deductions are derived from Professor Demaria's analysis as far as the consistency of general equilibrium theory is concerned.

Now, it is quite plain that this margin is never the same. It differs from individual to individual according to his particular character, and, in the same individual, from time to time according to the particular circumstances in which he acts. Under the first heading, we must distinguish cautious individuals from audacious ones; it is quite clear that the actions of the latter will contain a margin of irrationality much larger than that of the former. Under the second heading we must distinguish optimistic times from pessimistic ones; it is clear that when we are optimistic the margin of irrationality in our actions will be much larger than when we are pessimistic. It is often said, indeed, that pessimistic people are much more "calculated" than optimistic people. Of course, nothing prohibits the rational calculus, which backs the action, from remaining the same whatever the margin of irrationality. But we have to agree that, usually, greater irrationality means a rougher rational calculus and vice versa.

8. Naturally, the factors of irrationality, which occur in human actions, would not seem capable of being collected in a general system. Therefore, we should be obliged to admit their existence without getting from this experience any useful deduction for our theoretical analysis. However, we believe that some general observations are possible, at least to some extent. The point to which I should like to call the attention of the reader is that connected with the waves of optimism and pessimism occurring in real life.

So long as we examine the behaviour of particular individuals, it is impossible to say more than what we have already said, namely, that the pessimistic are much more "calculated" than the optimistic. It is impossible, for instance, to be certain if, in given circumstances, an individual is optimistic or pessimistic and if this psychological attitude is likely to occur periodically or not. But, if we consider the behaviour of the community as a whole[1] we can make a step forward.

We realise, indeed, that times of economic prosperity, when the level of income and employment is high, are times of optimism, while the times of depression, when the level of income and employment is low, are times of pessimism. Therefore, we can draw the conclusion that the margin of irrationality is high during economic prosperity, low during depressions. The irrationality contained in human behaviour could, then, be expressed quite simply with a 'sine' function, positively correlated with the fluctuation of the usual business cycle. We shall call this particular function "the irrationality function", simplifying it with the following functional relation: $y = a \sin x + c$, where y indicates the degree of irrationality and x the flow of time; the parameters a and c are so related to one another that $c > 1$ and $0 < a < c$.

---

[1] Of course we refer particularly to the entrepreneur's behaviour.

We get graphically the curve drawn in Fig. 2.

Of course, it is quite reasonable to assume that, from time to time, the value of the parameters c or a or both changes, provided that the aforesaid relation between them remains unaltered. Usually, in the economic analysis, the parameter a is implicitly equated to zero so that the irrationality function is expressed by a straight line parallel to the x-axis. In such a case, of course, this function is a constant not at all relevant to the economic analysis.

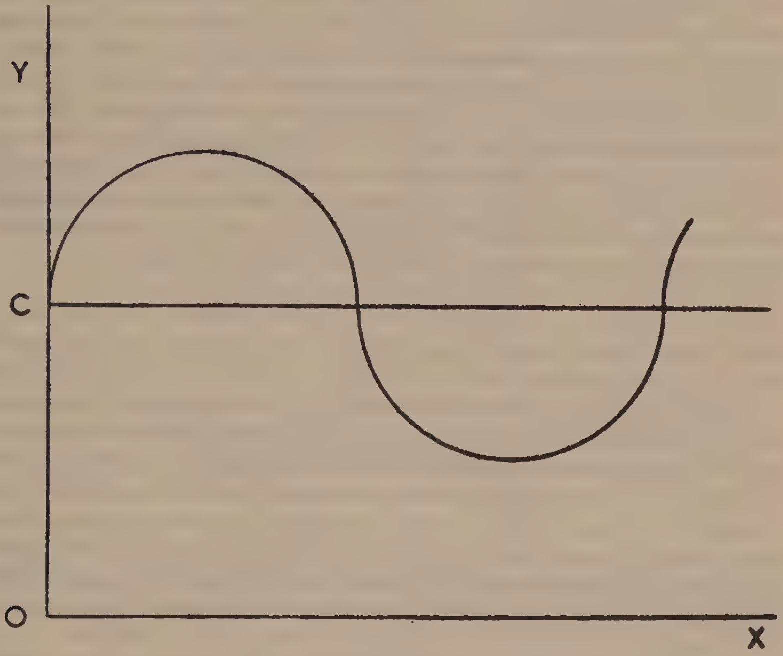


Fig. 2

Now, we agree that the situation of full employment coincides, in the cyclical sequence, with the prosperity period. Therefore the full employment equilibrium is both the result and the partner of human actions containing a large margin of irrationality. For this reason the stability of full employment equilibrium is a highly precarious one. The irrationality, indeed, favours the formation of the so-called "climate" or "atmosphere" among individuals, and nothing is more dangerous to the equilibrium stability than that group psychology. On the other hand, in the depression times the formation of a particular "climate" is more difficult. Moreover, I should say that, owing to irrational factors, prosperous times are much more favourable to *change* of " climate " than depressed times. Therefore we have to draw the conclusion that times of prosperity are times of higher dynamism than times of depression. Perhaps an explanation of the observed fact that it is much easier to step from the boom into the depression than from the depression into the recovery is to be found in those different psychological dynamisms of prosperity and depression.

An important deduction, in my opinion, can be drawn from the introduction of the irrationality function: namely that the instability of full employment equilibrium in the dynamic hypothesis (elastic expectations) happens to be much greater than in Professor Lange's analysis. Moreover, in the particular circumstances studied in Section II, the extension of the concept of instability to the case of inelastic expectations can be allowed for much more easily. Indeed, the wave of pessimism, determined by a fall of the general level of prices, can easily spread and offset the inelasticity of expectations, in so far as the concept of " normal " prices is likely to be much weaker when the margin of irrationality is wide than when it is narrow.

IV

9. Now let us turn to a criticism of a particular passage in Professor Lange's analysis.

We have seen before that in the static hypothesis, when the nominal quantity of money is constant and expectations are static and certain, we get a positive monetary effect as the reaction of the market to a proportional fall of prices and, therefore, the restoration of equilibrium. We said before that the positive monetary effect shows itself through a substitution of goods for money, thus overlooking the possibility of a substitution of bonds and stocks for money. We have now to take into account the latter substitution together with the former.

Professor Lange writes: "When the increase in demand resulting from substitution of goods for money is directed to securities rather than to commodities, price flexibility may fail to restore full employment of factors of production, even though the monetary effect is positive" (p. 18).

Firstly, let us confine our observations to the case of substitution of bonds for money (our argument does not change if we extend it, *mutatis mutandis*, to the case of substitution of stocks for money) and suppose that the positive monetary effect shows itself only in this way. According to Professor Lange we cannot have in this case the restoration of full employment equilibrium if the investment activity is highly inelastic with respect to reduction in interest rates.

Now, we ask, is it true that price flexibility may fail to restore full employment equilibrium when the positive monetary effect shows itself with a substitution of bonds for money? I should not think so.

Indeed, we know that the inducement to invest is a decreasing function of the rate of interest, as the classical school and Lord Keynes himself maintained. But we know, too, that recently this functional relation has been largely disproved both on theoretical and on empirical ground. What, then, is the solution of this dilemma? According to my understanding of the matter, the solution is a quite simple one. All depends on whether we assume static or dynamic hypothesis. In the static hypothesis, when the expectations of future prices are static, the inducement to invest is quite reasonably a decreasing function of the rate of interest. Entrepreneurs are faced with a fall in the rate of interest due to the substitution of bonds for money while prices of goods remain sticky, and they expect rates of interest and prices to continue at the current level. Clearly, in such circumstances, the inducement to invest is very strong. On the other hand, when we assume a dynamic hypothesis things go quite differently. In this case, as we know, we get non-unit elasticity of expectations. Therefore we must allow for entrepreneurs expecting future prices and rates of interest to be different from the current ones. But we know, too, that usually rate of interest expectations are inelastic, while price expectations are elastic. It follows that, owing to the relative stability of the rate of interest over time, changes of this rate are a minor factor in the entrepreneurs' plans. Entrepreneurs focus their attention on the movements of prices, that is to say on profits. Therefore in the dynamic hypothesis the functional relation between inducement to invest and rate of interest breaks down; in its place we can build a new functional relation (an increasing one) between expected profits and inducement to invest.

In the first part of his analysis Professor Lange assumes static conditions. Therefore his conclusions, as quoted above, are inconsistent. To sum up, we can say that, in the static hypothesis, price flexibility *never* fails to restore full employment equilibrium whatever the way in which the positive monetary effect shows itself.

The Marginal Cost Controversy: A Reply

By J. A. Nordin

Recently Mr. R. H. Coase has stated his objections against basing prices on marginal costs, and has argued for what he calls "multi-part" pricing.[1] The issue has to do mainly with decreasing-cost industries, and the multi-part procedure apparently amounts to price discrimination.[2]

He assumes all costs attributable to individuals responsible for them, all costs incurred currently, and all factors in perfectly elastic supply. The example he uses is the following: the consumers live in a ring around a central market. A carrier takes goods to them from the market. The carrier can take additional packages without any difficulty, within limits sufficiently wide. The income distribution is assumed optimum. Marginal-cost pricing is identified with charging the consumers only the central market price, the marginal cost of carrier-services being zero.[3] Multi-part pricing is identified with charging one price for the goods at the central market and another price for the whole services of the carrier.[4]

In this setting, Mr. Coase makes the following charges against marginal-cost pricing:

(1) It causes misallocation of resources.

(2) It involves a direct change of the income distribution by changing prices.

(3) It involves an indirect change of income distribution through the effects of the tax-and-bounty system that would have to be used to cover the costs of the carrier service.[5]

Three general objections may be raised against Mr. Coase's assumptions and his example. In the first place, it seems unnecessarily unrealistic to assume that the agents are in perfectly elastic supply. The problems of an economising system can be examined more usefully on the assumption of fixed supplies of the agents. Of course, the intermediate case is the most realistic of all, but it is at least possible to think of a closed economy with fixed quantities of the agents, while it is not possible to think of a closed economy with perfectly elastic supplies of the agents.

---

[1] R. H. Coase, "The Marginal Cost Controversy," *Economica* N.S.13, August, 1946, pp. 169 ff. Mr. Coase identifies marginal-cost pricing with making prices and marginal costs equal, and the article that engages most of his attention is Harold Hotelling's "The General Welfare in Relation to Problems of Taxation and of Railway and Utility Rates," *Econometrica*, Vol. 6, July, 1938, pp. 242 ff., in which Professor Hotelling urges that prices be made equal to marginal costs. However, in what follows it is convenient to deal also with cases in which prices are made proportionate to marginal costs, but not equal to them.

[2] Multi-part pricing is referred to as "a type of pricing well known to students of public utilities . . ." (R. H. Coase, *op. cit.*, p. 173).

[3] *Ibid.*, p. 171.

[4] *Ibid.*, p. 173.

[5] *Ibid.*, p. 174.

In the second place, his analysis is entirely partial. If the total effect of any action is to be determined, it is necessary to set up a general model, even if there must be extensive simplification.

In the third place, the carrier example is not closely analogous to the situation in an electric light plant. It amounts to artificially putting together two successive stages of production. There should indeed be separate prices for the good at the central market, and for the services of the carrier. But this fact will not clarify the problems of a light plant, where fixed and variable agents are combined in one production process. While it might be possible to set a separate price for steam in the case of a steam plant, there are fixed and variable agents both before and after the point at which the steam enters the turbine. Thus the carrier example does not support price discrimination.

General Model for One Consumer

Suppose there is only one consumer; Mr. Coase's discussion of the allocation of resources presumably should apply even in this case. Assume that all production is directed by a central authority, attempting to maximise the consumer's utility index. Assume at first that the authority knows the consumer's utility surface.[1]

Let there be two agents, x and y. At the beginning of the first period, an allocation can be made for both agents. At the beginning of the second period the y allocation can be changed, but the allocation of x is fixed for two periods at a time. Suppose that at the beginning of the first period the authority enters into a contract prescribing the payment per unit of x, the contract to continue in force during both the first and the second periods. Assume that the intensity of use of the fixed agent does not affect its durability.[2]

---

[1] This assumption is relaxed below (p. 139).

[2] Professor Hayek has called attention to the important fact that intensity of use does affect the durability. (F. A. Hayek, editor, *Collectivist Economic Planning*, London, Routledge, 1935, p. 228.) But the form of the contract between a machinery manufacturer and a machinery user introduces a good deal of non-essential difficulty into the analysis. There is no reason why the purchaser could not lease the machine on a long-term basis, with provision for periodic inspection to determine that the intensity of use has been kept within contract limits. There is a degree of arbitrariness about the treatment of depreciation; but this is true even under competitive conditions. A manager's decision does not become less arbitrary because other men in the same industry must also make arbitrary decisions. In fact, regulated monopoly may be the only field in which depreciation can be handled definitively. On this point, see Gabriel A. D. Preinreich, " Annual Survey of Economic Theory: The Theory of Depreciation ", *Econometrica*, Vol. 6, July, 1938, p. 239. It is difficult to know how to take account of the fact that resources must be used non-recurrently in the developmental period. Probably a competitive analogy ought to be followed, by amortising the developmental costs over the expected life of the enterprise. Suppose that two products are of roughly the same importance to the community, and that only one of them involves heavy developmental expense. The developmental resources presumably contribute to later production. Since large amounts of social resources are devoted in the early years to the production of the good requiring preliminary development, it seems reasonable to divert resources away from it later; the diversion can be accomplished by raising the price of the good, i.e., by adding to the marginal-cost-determined price an amount to cover amortisation of the developmental expense. (See F. A. Hayek, *op. cit.*, p. 230.)

Let there be two goods, v and w, connected with the utility surface u in period 1 by the function

(1) $u = vw$.

The production functions will be the same in both periods. Let them be

(2) $v = x_v^{\frac{1}{2}} y_v (10 - y_v)$

(3) $w = x_w^{\frac{1}{2}} y_w^{\frac{1}{2}}$

where x_v is the quantity of x used in the production of v, and the other new symbols are to be interpreted accordingly. The production functions make v the product of a decreasing cost industry, within the relevant range; w has a linear and homogeneous production function. Let

(4) $x_v + x_w = 1$, and

(5) $y_v + y_w = 1$.

Let the consumer's income be 1.699 per period, and assume that all of it is spent each period.

Suppose that the pricing system operates as follows: the authority sets prices proportionate to marginal costs. It also transfers resources between the two industries so that finally the value of the marginal product is the same for both industries, for a given resource. Whatever agents are variable at a given time of decision are substituted for each other until the marginal cost of each good is the same in terms of both agents.[1]

Both Agents Allocable

There are a number of questions to be asked in connection with the operation of this model under the specified conditions. First: would marginal-cost pricing misallocate resources in the first period, when both agents are allocable?

From equations (1) through (5),

(6) $u = x_v^{\frac{1}{2}}(1 - x_v)^{\frac{1}{2}} y_v (10 - y_v)(1 - y_v)^{\frac{1}{2}}$.

The optimum allocation of resources will maximise u. The proper allocation is:

(7) $x_v = 0.5$

(8) $x_w = 0.5$

(9) $y_v = 0.65$

(10) $y_w = 0.35$, so that

(11) $w = 0.4175$

(12) $v = 4.295$.

---

[1] This last assumption is introduced to determine the agents' wage rates. These rates are important only in the first period; in the second period the total payment to the fixed agent is known, and whatever remains is distributed evenly over the units of the variable agent. When Mr. Coase's second and third charges are examined, only one agent is assumed.

If the marginal-cost pricing system brings about this allocation, it is successful.

The authority will make a decision about p_v and p_w, the prices of v and w, respectively. Then the consumer will adjust his consumption so that

$$(13)\qquad \frac{p_v}{p_w}=\frac{\dfrac{\partial u}{\partial v}}{\dfrac{\partial u}{\partial w}}=\frac{w}{v}$$

If the authority has calculated correctly, it will be able to use the allocation system (7) through (10) to produce the quantities that the consumer has chosen on the basis of the prices set by the authority.

Let the authority make prices proportionate to marginal costs. Then

$$(14)\qquad \frac{p_v}{p_w}=\frac{\dfrac{\partial x_v}{\partial v}p_x+\dfrac{\partial y_v}{\partial v}\,p_y}{\dfrac{\partial x_w}{\partial w}p_x+\dfrac{\partial y_w}{\partial w}\,p_y}$$

where p_x and p_y are the prices of the agents.

Equation (14) will be satisfied if

$$(15)\qquad \frac{\dfrac{\partial w}{\partial x_w}}{\dfrac{\partial v}{\partial x_v}}=\frac{p_v}{p_w}\quad\text{and}$$

$$(16)\qquad \frac{\dfrac{\partial w}{\partial y_w}}{\dfrac{\partial v}{\partial y_v}}=\frac{p_v}{p_w}$$

when the optimum allocation is used.

From (11), (12) and (13)

$$(17)\qquad \frac{p_v}{p_w}=0.09725.$$

From (2), (3) and (7) through (10),

$$(18)\qquad \frac{\dfrac{\partial w}{\partial x_w}}{\dfrac{\partial v}{\partial x_v}}=\frac{x_v^{\frac{1}{2}}y_w^{\frac{1}{2}}}{x_w^{\frac{1}{2}}y_v(10-y^{a})}=0.09725\quad\text{and}$$

$$(19)\qquad \frac{\dfrac{\partial w}{\partial y_w}}{\dfrac{\partial v}{\partial y_v}}=\frac{x_w^{\frac{1}{2}}}{2x_v^{\frac{1}{2}}y_w^{\frac{1}{2}}(10-2y_v)}=0.09725.$$

Thus, making prices proportionate to marginal costs will bring about the optimum allocation of resources in period 1; consequently Mr. Coase's first indictment does not appear to be justified for the period in which the initial resource allocation is made, on the assumption that the authority knows the one consumer's indifference map.[1]

Since making prices proportionate to marginal costs gives the optimum resource allocation for the one customer, a system of price discrimination could at best give only the same result. It should be noted in this connection that in deciding on the optimum allocation there was no restriction on the number of prices that might be charged.

ONE AGENT ALLOCABLE

The second question is: if the indifference map changes between the first and the second period, would marginal-cost pricing misallocate resources in the second period, when only one resource is allocable?

Suppose that in the second period the utility function is

$$(20) \quad u = vw^{\frac{1}{4}}.$$

From (2), (3), (4), (5) and (20),

$$(21) \quad u = x_v^{\frac{1}{2}}y_v(10-y_v)(1-x_v)^{\frac{1}{4}}(1-y_v)^{\frac{1}{4}}.$$

Under the assumptions that have been made, the allocation of x cannot be changed from what it is in (7) and (8). To maximise u in the second period

$$(22) \quad y_v = 0.785$$

$$(23) \quad y_w = 0.215.$$

Then from (2) and (3),

$$(24) \quad w = 0.328$$

$$(25) \quad v = 5.11.$$

Following the same procedure used in period 1 will show that in the second period

$$(26) \quad \frac{p_v}{p_w} = 0.1281$$

---

[1] Mr. Coase mentions only the special case in which prices are made equal to marginal costs. This amounts to choosing a particular constant of proportionality to be applied to all marginal costs. The choice of a constant determines whether all costs are to be covered by receipts for all goods taken together. If costs are not completely covered by receipts, there must be some taxation. Professor Lerner has argued that prices ought to be equal to marginal costs. (Abba P. Lerner, *The Economics of Control*, New York, MacMillan, 1944, p. 102.) He defines the value of the marginal factor as "the physical increment of the factor of production (that is needed to make the increment of product) multiplied by the price per unit paid for it . . ." (*Ibid.*, p. 75.) He then states that prices could not all be proportionate to values of marginal factors unless they were also equal to them. (*Ibid.*, p. 102.) He does not support this statement in any way; it appears to be certainly wrong. Moreover, his arithmetic example gives no indication of the nature of the production functions; consequently it provides no insight into the problem of decreasing-cost industries.

for the optimum allocation of y. The ratio of marginal costs in terms of y is

$$(27) \quad \frac{mc_v}{mc_w} = 0.1281.$$

Thus even when there has been a change in the indifference map, the authority should make the second period prices proportionate to marginal costs. Doing so will give the optimum allocation of the variable agents, that is, will maximise the consumer's utility in the second period.[1]

Again it may be possible to get the same resources allocation with price discrimination, but it is impossible to improve the allocation. Thus Mr. Coase's indictment of marginal-cost pricing is not justified on the basis of resource allocation, provided that prices are made proportionate to marginal cost, and provided that the utility surface of the one consumer is known to the authority.

The Approximation Process

The third question to be asked is: if the authority does not know the consumer's indifference map, will marginal-cost pricing effect an approximation to the optimum resource allocation?

Assume that the indifference map remains constant, and assume still that the authority equates the value of the marginal product of each agent for both products. Only the first period need be dealt with, since the same considerations apply to both periods.

In Chart I, Curves 1 and 4 are indifference curves. Curve 2 is a transformation curve; it shows for any value of either good the maximum production of the other.[2] Curve 3 is the optimum opportunity line, whose slope is $-p_w/p_v$; after the authority has announced the prices, the consumer can choose any combination lying on the opportunity line. Point A indicates the consumer's optimum combination of v and w. It is the point at which the transformation curve is tangent to some indifference curve.[1] To maximise the consumer's utility, the authority will attempt to choose an opportunity line that will be tangent to both the transformation curve and the indifference curve.

---

[1] Mr. Howard R. Bowen has stated: "According to accepted theory, a maximum of human satisfactions will be attained, through the use of a given supply of factors, if . . . the output of each constant- or increasing-cost industry is adjusted so that the price of the product is equal to average cost, and the output of each decreasing-cost industry is adjusted so that the price of the product is equal to marginal cost. . . ." (Howard R. Bowen, "The Interpretation of Voting in the Allocation of Economic Resources", *Quarterly Journal of Economics*, Vol. 58, November, 1943, p. 28.) Mr. Bowen adduces no argument on this point. He refers to the writings of Pigou, Lange, Hotelling and Hicks, but gives no specific page citations. The two parts of Mr. Bowen's statement appear to be incompatible. Suppose that there are two industries, one of constant cost and one of decreasing cost. Suppose that originally price was equal to average cost in both industries. To put Mr. Bowen's second suggestion into effect, more resources would have to be used in the decreasing-cost industry. But presumably all resources were previously employed; therefore, resources would have to be moved out of the constant-cost industry. If that were done, Mr. Bowen's first condition would not be satisfied. (This condition is not satisfied in the example under consideration in the present text.)

[2] The transformation curve is drawn from the production functions (2) and (3). The existence of decreasing cost is responsible for its being concave upward. The indifference curves are not based on the actual equations.

In the present case the danger is that, not knowing the indifference map, the authority may select an opportunity line (Curve 5) that will bring the consumer to Point B. Point B represents a possible combination of v and w, since it lies on the transformation curve. The opportunity line, Curve 5, is tangent to an indifference curve, so the consumer will make no further adjustments. Also the shape

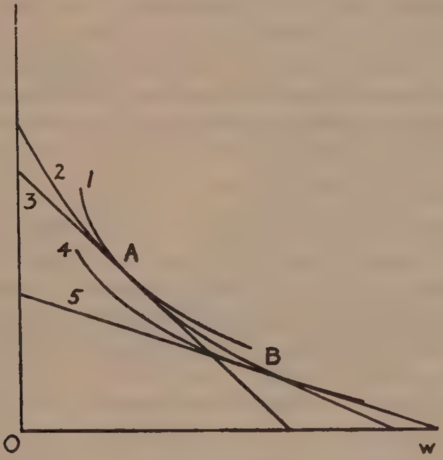


Chart I

of the indifference curves may be such that the total income of the consumer is taken.

However, one assumption is violated at Point B. It has been assumed above that the authority will shift resources between v and w until the value of the marginal product is the same for both. The slope of Curve 3 is dv/dw. Since at Point B Curve 5 cuts through Curve 3, at that point

$$(28)\quad \frac{p_w}{-p_v} > \frac{d_v}{d_w}, \qquad \text{or}$$

$$(29)\quad p_w d_w > -p_v d_v.$$

If y, for instance, is diverted from v to w,

$$(30)\quad dy_w = -dy_v.$$

---

[1] The fact that the transformation curve is concave upward introduces some difficulty. But the indifference curves will undoubtedly have steep slopes as they approach the vertical axis, and flat slopes as they approach the horizontal axis. Thus it appears that the worst possible effect of the concavity is moving Point A away from a 45° line from the origin.

Let the left side of (29) be divided by dy_w, and the right side by $-dy_v$. Then

$$(31) \quad p_w \frac{dw}{dy_w} > p_v \frac{dv}{dy_v}.$$

But (31) expresses the condition under which y should be diverted from v to w. Therefore Point B is inadmissible, since it has been assumed that the value of the marginal product of each variable agent must be the same for both goods. Only at Point A will all the assumptions be satisfied. Therefore the authority can find Point A by experimentation, assuming that the factual conditions remain fixed long enough for the approximation process to be worked out.[1]

This result appears to cast doubt on Professor Coase's thesis that marginal-cost pricing provides no criterion for the allocation of resources, provided the authority knows what goods ought to be produced.

Project Selection

The last question to be asked in connection with resource allocation is: what determines whether a given project should be undertaken?

Professor Hotelling's discussion of marginal-cost pricing does suggest that deciding whether to undertake a new project is a very imprecise process, based on surveys to indicate what the project would do to social welfare.[2] In this connection Mr. Coase notes that at least it may be useful to know whether a particular kind of project has been worth while, since knowing may be useful when similar decisions arise in the future.[3]

Suppose that the constant of proportionality is chosen so that the authority makes a loss on the decreasing-cost industry, the loss being made up from profits in other industries.[4] The reason why it may be sensible to operate the decreasing-cost industry at a loss is that some element of indivisibility prevents a reduction of scale. With complete divisibility, it would be possible to set up a model in which resource use would be an optimum while each industry would cover all its costs. But if there is any lack of divisibility, the fact that an industry is operated at a loss does not prove that it ought to be abandoned. The total result of operating it with a given loss must be compared with all the other results that are feasible under the given technical conditions.[1]

---

[1] For an extended discussion of the approximation process in a similar setting, see Oskar Lange, "On the Economic Theory of Socialism", reprinted in *On the Economic Theory of Socialism*, edited by Benjamin E. Lippincott, University of Minnesota Press, Minneapolis, Minnesota, 1938, pp. 57 ff.

[2] Harold Hotelling, *op. cit.*, p. 247, "The change in the total net benefit of society that will result from a proposed new public enterprise, such as building a bridge, may fairly be set against the cost of the bridge to decide whether the enterprise should be undertaken . . . The actual calculation . . . would be a matter of estimation of vehicular and pedestrian traffic originating and terminating in particular zones, with a comparison of distances by alternative routes in each case, and an evaluation of the savings in each class of movement ". It is true that some public construction must be evaluated in this way; but for products like electricity there appears to be no reason for going outside the price system. Certainly putting Professor Hotelling's suggestion into general use would be impracticable. (See Oskar Lange, *op. cit.*, pp. 57 ff.)

[3] R. H. Coase, *op. cit.*, p. 175.

[4] For a discussion of the effects of several types of indivisibility, see George J. Stigler, "Production and Distribution in the Short Run", *Journal of Political Economy*, Vol. 47, June, 1939, p. 305.

On the basis of partial analysis, it might be argued that an enterprise that does not cover all its costs is undesirable; that there would be a gain if the resources used in such an enterprise were parcelled out among other enterprises. But such a programme would not necessarily be beneficial; there is a change in the marginal utility of the goods produced by the other enterprises. To decide on such an issue as the present one, partial relations are useless.

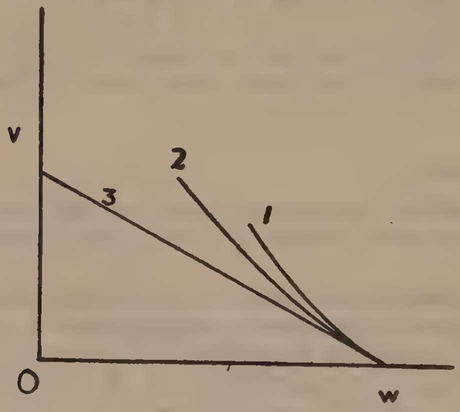


Chart II

Granted that there are potential goods that ought not to be produced, consider the way in which the authority can identify them. It should be noted that if either *v* or *w* is such a good, an indifference curve must cut at least one of the axes. Chart II shows a situation in which *w* ought not to be produced. Curve 1 is an indifference curve, Curve 2 is the transformation curve, and Curve 3 is the opportunity line. All three are drawn tangent at the optimum Point A, where there is no production of *w*.

---

[1] Professor Hayek's conclusion is as follows: "If rational disposition of resources is to be attempted, . . . it is certainly necessary to provide for the replacement of the capital out of the gross proceeds of the industry, and it will also be necessary that the returns from this reinvested capital should be at least as high as they would be elsewhere". (F. A. Hayek, *op. cit.*, p. 229.) If constant demand conditions are expected for the future, and if the life of the fixed equipment is not appreciably affected by the intensity of use, it will be convenient to think of renting the fixed agent on a rigid-contract basis. In the period when the fixed agent is put into service, its marginal cost must be considered in setting price. In later periods it has no marginal cost. As is indicated in the present text, making prices proportionate to marginal costs brings about the optimum use of resources. Phrases like "replacement of capital out of . . . gross proceeds" are not relevant to the social problem. When replacement is contemplated, there must be a re-allocation of resources, and at that time a new set of marginal costs must be considered in setting relative prices for the finished goods. But since some industries have decreasing costs, it is never reasonable to require each industry to cover its total costs.

Mr. Coase's test for prospective projects is: can all costs be covered, with price discrimination permitted?

In the situation shown in Chart II price discrimination could not improve on the result, since utility is maximised at Point A. Price discrimination might even lead to a smaller utility. Through price discrimination it might be possible to make good *w* self-supporting. This fact is unfortunate, since apparently price discrimination plans contain no way of deciding how far to go in stimulating the production of goods that cannot cover their total costs in a single price situation. In contrast, if prices are made proportionate to marginal costs, and if the value of the marginal product is equated for both goods, there is an automatic indication as to whether a particular good should be produced. Thus marginal-cost pricing appears superior to price discrimination for making such decisions.[1]

Income Redistribution: Relative Prices

In order to consider Mr. Coase's charges relating to income distribution, assume that there are two consumers. The first charge is that marginal-cost pricing redistributes income by lowering the relative prices of the products of decreasing-cost industries. The second charge is that income is further redistributed if marginal-cost pricing involves taxation.

In connection with the first charge, what does it mean to say that a price system redistributes income?

The implication of such a statement is that there is some normal position from which the authority moves when it determines prices on the basis of marginal costs. If there is such a norm, it may be reasonable to say that the change helps some people and hurts others, and that the change thus has the same result as some redistribution of income.

Actually the selection of a norm is a matter of ethical judgment, and so is arbitrary from an economic standpoint. Several such norms have been examined by Dr. Lange and Professor Tintner.[2] In an extreme case, the authority might set up a welfare function depending on each member's purchase of each type of good.

---

[1] Mr. T. Wilson has suggested that marginal-cost pricing makes investment policy difficult. He writes, "In theory . . . one must fall back upon consumers' and producers' surpluses and engage in the pleasant diversion of measuring areas under a series of curves". (T. Wilson, "Price and Outlay Policy of State Enterprise", *Economic Journal*, Vol. 55, December, 1945, p. 458.) No such process is involved in the procedure suggested in the present text. Clearly all price policies share one common drawback: in the absence of information about the demand for a product, it is impossible to decide whether to produce the product.

[2] Oskar Lange, "The Foundations of Welfare Economics", *Econometrica*, Vol. 10, July-October 1942, p. 215; Gerhard Tintner, "A Note on Welfare Economics," *Econometrica*, Vol. 14, January, 1946, p. 69.

Even within the class of single-price systems covering all costs for all industries together, a wide variation in results is possible. Consider an example in which there are two finished goods, one agent, and two consumers. Let the production functions be

(32) $v = y_v^2$

(33) $w = y_w$

so that v is produced under increasing returns, while w is produced under constant returns. Let y_v and y_w have the same meanings as before, and again let

(34) $y_v + y_w = 1.$

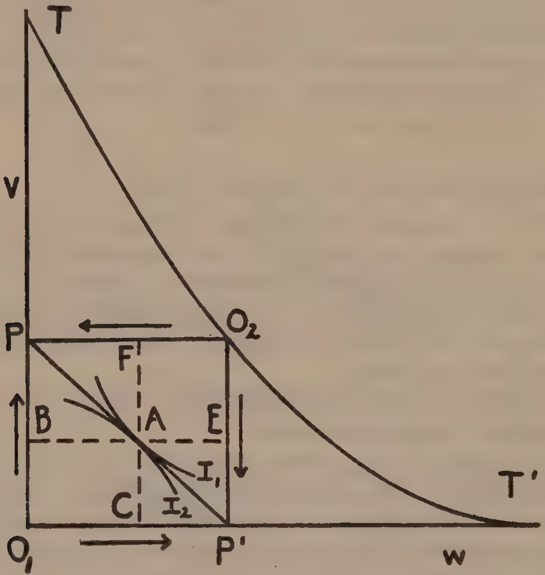


Chart III

From (32), (33) and (34), the transformation curve is

(35) $v = (1 - w)^2.$

Chart III shows the nature of a feasible price system. The origin for consumer 1 is at O_1, and its positive directions are indicated by the arrows proceeding from it. The origin for consumer 2 is at O_2, and its positive directions are indicated similarly. Consider the opportunity curve PP′. The consumption of v is AC for consumer 1 and AF for consumer 2. The consumption of w is AB for consumer 1 and AE for consumer 2. For consumer 1, some indifference curve I_1 must be tangent to PP′ at A, and for consumer 2 some indifference curve I_2 must be tangent to PP′ at A. If the price system is feasible, then O_2' will lie on the transformation curve TT′, so that the v, w combination is one that can be produced with the available resources.[1]

Under the assumptions that have been made, for every point on the transformation curve there is a single-price system that will make the given point the actual one. Let the consumers' utility functions be respectively

$$(36)\quad u_1 = v_1 w_1^{\frac{1}{2}}, \qquad \text{and}$$

$$(37)\quad u_2 = v_2^{\frac{1}{2}} w_2,$$

where

$$(38)\quad v_1 + v_2 = v, \qquad \text{and}$$

$$(39)\quad w_1 + w_2 = w$$

as before. Let each consumer spend the amount 1, so that

$$(40)\quad v_1 p_v + w_1 p_w = 1, \qquad \text{and}$$

$$(41)\quad v_2 p_v + w_2 p_w = 1.$$

Whatever the prices p_v and p_w may be, the consumers will adjust their purchases so that

$$(42)\quad \frac{p_v}{p_w} = \frac{\dfrac{\partial u_1}{\partial v_1}}{\dfrac{\partial u_1}{\partial w_1}} = \frac{2w_1}{v_1}$$

$$(43)\quad \frac{p_v}{p_w} = \frac{\dfrac{\partial u_2}{\partial v_2}}{\dfrac{\partial u_2}{\partial w_2}} = \frac{w_2}{2v_2}.$$

From (40) through (43)

$$(44)\quad p_w = \frac{1}{w}, \qquad \text{and}$$

$$(45)\quad p_v = \frac{1}{v}.$$

Any workable single-price system will satisfy equations (35) and (38) through (43). The welfare system selected by the authority will dictate an eighth equation, and possibly a ninth. Suppose, for instance, that the authority decides to maximise u_1, and that it is willing to allow the value of the marginal product to vary between the products. From (35), (36) and (38) through (43),

$$(46)\quad u_1 = \frac{2}{3\sqrt{3p_w}} \left[1 - \frac{2}{p_w} + \frac{1}{p_w^2} \right].$$

---

[1] This diagram is adapted from one used by Professor J. R. Hicks, in "The Foundations of Welfare Economics", *Economic Journal*, Vol. 49, December, 1939, p. 702. TT′ is drawn from (32) and (33). I_1 and I_2 are not drawn accurately.

When (46) is maximised with respect to p_w,

(47) $p_w = 5$

(48) $p_v = 1.563$

(49) $v_1 = 0.4267$

(50) $v_2 = 0.2133$

(51) $w_1 = 0.0667$

(52) $w_2 = 0.1333$

(53) $u_1 = 0.11$

(54) $u_2 = 0.0615$.

If u_2 is maximised similarly,

(55) $p_w = 2$

(56) $p_v = 4$

(57) $v_1 = 0.1667$

(58) $v_2 = 0.0833$

(59) $w_1 = 0.1667$

(60) $w_2 = 0.3333$

(61) $u_1 = 0.068$

(62) $u_2 = 0.0961$.

Chart IV reproduces the relevant part of the transformation curve, TT′. When u_1 is maximised, point 1 corresponds to O_2 in Chart III, point 1′ corresponds to A in Chart III, and P_1P_1' corresponds to PP′ in Chart III. Points 2 and 2′, and line P_2P_2' are to be interpreted similarly when u_2 is maximised.[1]

But the authority will probably seek a compromise, instead of maximising either u_1 or u_2. Suppose that the authority uses the following welfare system: the value of the marginal product of each agent must be equal for both goods and all costs must be covered by receipts, for both goods taken together.[2]

If this welfare system is used, it is necessary to add to equations (35) and (38) through (43) the following statement:

(63) $$\frac{\partial v}{\partial y_v} p_v = \frac{\partial w}{\partial y_w} p_w,$$

or, from (32), (33) and (38),

(64) $$\frac{p_v}{p_w} = \frac{1}{2\sqrt{v_1 + v_2}}.$$

When (67) is solved simultaneously with (35) and (38) through (43),

---

[1] The lines for situations 1 and 2 are drawn from (46) through (62).

[2] Such a result would, of course, be "automatically" reached in a world of atomistic competition, with linear and homogeneous production functions.

(65) $p_v = 2.25$
(66) $p_w = 3$
(67) $v_1 = 0.296$
(68) $v_2 = 0.148$
(69) $w_1 = 0.111$
(70) $w_2 = 0.222$
(71) $u_1 = 0.09875$
(72) $u_2 = 0.0858$.

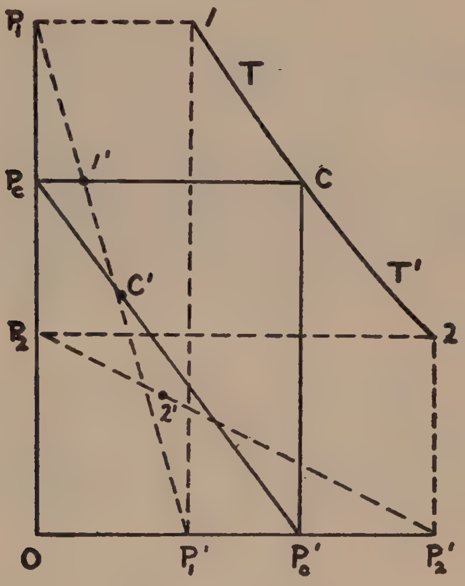


Chart IV

For the chosen welfare system, points C and C′ and line P_cP_c' in Chart IV are analogous respectively to points O_2 and A, and line PP′ in Chart III.[1]

If the authority does not know the utility functions, it must first make an arbitrary selection of a price system without being sure of satisfying (40) and (41). The price system selected by the authority will induce the consumers to select some total purchases $\bar{v}$ and $\bar{w}$. These quantities will differ from those the authority will have planned to produce, until an approximation process shall have taken place.

The compromise system just described might be called "dollar democracy". At the margin, a dollar of demand will have the same command over resources for both consumers, and in the production of both goods.[1] On this basis marginal-cost pricing with a proper proportionality constant will achieve the desired result. From (65) and (66),

---

[1] The lines for situation C are drawn from (65) through (70).

$$(73)\quad \frac{p_v}{p_w} = 0.75.$$

From (32), (33) and (67) through (70),

$$(74)\quad \frac{mc_v}{mc_w} = 0.75$$

so that marginal-cost pricing yields the proper result for the selected compromise.

However, the important thing is that for every other welfare system there is an appropriate price system. Therefore it is useless to speak of a redistribution of income through the authority's selecting one price system rather than another. Within a certain set of price systems, each price system can claim logical precedence over all others, provided that the authority accepts the appropriate welfare system.

The marginal-cost pricing system has been shown to be correct for a certain welfare system. On ethical or administrative grounds it is possible to reject that welfare system, but it is impossible to prove that the marginal-cost pricing system is either " right " or " wrong ".

INCOME REDISTRIBUTION : TAXATION

Mr. Coase's third objection against marginal-cost pricing is that the necessary taxation would redistribute income. But it is possible to base prices on marginal costs and yet cover all costs for all industries taken together ; thus this third objection presumably would not apply to the dollar democracy compromise just discussed.

SUMMARY

In connection with the allocation of resources, marginal-cost pricing has been examined in a case in which there are two agents (one of them being fixed), two finished goods and one consumer. At the beginning of the first period an allocation is made. At the beginning of the second period there is a re-allocation of the variable agent.

The marginal-cost pricing policy discussed makes prices proportionate to marginal costs, and equates the value of the marginal product for both goods. The following conclusions have emerged :

(1) If the authority knows the consumer's indifference map and both the fixed and the variable agents can be allocated, the authority can maximise the consumer's utility by using the marginal-cost pricing system.

---

[1] For a related concept, Professor W. H. Hutt has used the phrase " consumers' sovereignty ", (" The Concept of Consumers' Sovereignty ", *Economic Journal*, Vol. 50, March, 1940, p. 66.) However, Professor Hutt does not specify how the sovereignty is to be constituted. The phrase " dollar democracy " has been chosen to emphasise the way in which power is divided among the consumers.

(2) If the authority knows the consumer's indifference map and only the variable agent can be allocated, the authority can make the optimum allocation by using the marginal-cost pricing policy.

(3) If the authority does not know the indifference map, it can make successive approximations to the optimum allocation by using the marginal-cost pricing policy.

(4) The marginal-cost pricing policy provides a method for determining whether a given product ought to be produced.

When there are two consumers, the choice of a price system involves problems of income distribution. Once the authority has selected a welfare system, it can then determine what price system ought to be used to bring about the objectives of the welfare system. The price system may or may not cause each good to cover its costs, and it may or may not necessitate taxation.

Economically the choice of a price system is arbitrary, since it depends on the choice of a welfare system, which in turn depends partly on ethical and political considerations. There can be no agreement on one best price system, unless there can be agreement on one best welfare philosophy.

The Marginal Cost Controversy: Some Further Comments

By R. H. Coase

Professor Nordin does not examine in any detail the arguments which I advanced in my article on the Marginal Cost Controversy. His procedure is to set out the reasoning which leads him to conclusions opposite from those which I reached in my article. But Professor Nordin's arguments are subject to much the same limitations as those which I was criticising. I shall therefore in this note restate, as simply as possible, my reasons for thinking that the kind of argument used by Professor Nordin cannot lead to the conclusions which he draws. My basic assumptions will be the same as in my original article. I cannot claim to have fully understood Professor Nordin's mathematical sections. But fortunately, the points at issue do not turn on the validity of Professor Nordin's mathematical arguments.

I shall start with what is probably the most important question—whether charging (and only charging) an amount per unit equal to marginal cost leads, in conditions of decreasing average cost, to a maldistribution of resources. My position can be simply stated. If certain factors of production can be obtained free in one use (because they do not enter into marginal cost) but have to be paid for in another use (because they enter into marginal cost), consumers may choose to employ these factors in the use in which they are free even though they would in fact prefer to employ them in some other way. If the Hotelling-Lerner solution is adopted, there is only one way out of this difficulty. This is for the State to decide whether or not each consumer should be supplied with the particular good concerned. This would be done by estimating whether or not each consumer would be willing to pay an amount equal to the total cost of supplying him, if he was called upon to do so. I argued that no Government could estimate individual demands accurately; that if all pricing were on a marginal-cost basis, there would be less information available by which such an estimate could be made; and that the incentive to correct forecasting would be diminished if there were no subsequent market test of whether such estimates of individual demand were correct or not.

What are Professor Nordin's arguments on this question? The conclusion at the end of the first section of his analysis is that "Mr. Coase's indictment of marginal-cost pricing is not justified, provided that prices are made proportionate to marginal cost and provided that the utility surface of the one consumer is known to the authority". In his next section, Professor Nordin assumes that the authority does not know the consumer's indifference map. He states at the end of this section: " This result appears to cast doubt on Mr. Coase's thesis that marginal-cost pricing provides no criterion for the allocation of resources, provided the authority knows what goods ought to be produced ". I am puzzled as to why Professor Nordin should regard these sections as being a criticism of the argument in my article. Of course, if the authority knew each consumer's indifference map or knew what goods ought to be produced, I would not argue that marginal-cost pricing leads to a maldistribution of resources; I would merely argue that pricing is, in these circumstances, almost certainly superfluous. This point is central to my argument. It will be found on page 175 of my article.

Professor Nordin does not deal with my objection to the Hotelling-Lerner solution until he reaches his section entitled Project Selection. I have read this section with great care and I am bound to record my impression that Professor Nordin has not really understood the point I was making in my article. He states that the fact that a loss is being made in conditions of decreasing average cost, when consumers are charged an amount per unit equal to marginal cost, is not in itself a proof that the good should not be produced. I agree. But such a proposition shows very clearly the disadvantage of the Hotelling-Lerner solution. For it is also true that the fact that a loss is being made is not a proof that the good ought to be produced. By following a multi-part system of pricing as I suggested in my article, it is possible both to have the correct allocation of resources and to make a loss a sign that the good should not be produced. Professor Nordin calls multi-part pricing " price discrimination " and claims that there is " no way of deciding how far to go in stimulating the production of goods which cannot cover their total costs in a single price situation ". I will discuss later in this note the appropriateness of describing multi-part pricing as price discrimination. Here I need only say that the method of determining whether a product should be produced seems to me to be clear. I do not deny that the output of every product ought to be such that the marginal valuation of the product by the consumer is equal to marginal cost. But there is a further condition: that the consumer should value the total supply at an amount which is equal to or greater than total cost. Simply to equate marginal cost and the marginal valuation is not to determine, in conditions of decreasing average cost, whether the total supply should be undertaken or not. The advantage of multi-part pricing is that consumers can be asked to pay an amount which is equal to the total cost and therefore it is possible to discover whether consumers value the total supply at more than the total cost of supplying them. At the same time, additional units can be supplied at additional cost—and therefore the right output can be obtained. I would add that no " approximation process " is possible. If it is to be discovered whether consumers are willing to pay an amount equal to total cost, this can be done, under a pricing system, only by asking them to pay this amount.

The next criticism I made of the Hotelling-Lerner solution was that this form of pricing led to a redistribution of income. Professor Nordin asks, " . . . what does it mean to say that a price system redistributes income ? ", and goes on to say that " The implication of such a statement is that there is some normal position from which the authority moves when it determines prices on the basis of marginal cost ". Professor Nordim seems to be searching for some deeper meaning than that which I had intended. I can make my point of view clear by means of an example. Let us suppose that the Government wishes to double the money income of one individual. It could do this by taxing others and transferring the money raised to the individual concerned. But it could follow an entirely different procedure. It could halve the prices which this individual is charged for goods and services. This would, of course, mean that others, through taxation or in some other way, would have to pay the difference between the prices charged and the cost (if we assume that prices previously were equal to costs). It seems clear that the second procedure achieves results which are in no way different from those which follow from the first procedure, the straightforward redistribution of money incomes. Of course, if one price only is lowered, there is, as I explained above, likely to be a maldistribution of resources as well as a redistribution of incomes. I agree with Professor Nordin that it is not possible to discuss whether a redistribution of income is desirable without introducing ethical considerations. But I had assumed in my article that the initial distribution of income was optimum and, of course, in the determination of the optimum distribution ethical considerations must play their part. The redistribution of income which follows from the Hotelling-Lerner solution can be justified only if it is considered desirable that there should be a redistribution of money income in favour of consumers of goods produced under conditions of decreasing average costs. And this will not usually be the case.

My third objection to the Hotelling-Lerner solution was that the increased taxation needed to recoup the losses made in industries with decreasing average costs would itself have harmful effects. Professor Nordin's reply is very condensed but I think I understand what he has in mind. He believes that prices should be proportionate to marginal cost but need not be equal to it. It is then possible to make all prices proportionate to marginal cost and yet cover all costs for all industries taken together, without there being any need for additional taxation. Professor Lerner has pointed out the grave weaknesses of this argument. He explains at some length in his *Economics of Control* that it is not enough that the amount paid for additional units consumed of a product should be proportionate to marginal costs; they must be equal. Professor Nordin claims that Professor Lerner " does not support this statement in any way: it appears to be certainly wrong ". Professor Lerner's argument (with which I agree) can be found on pp. 102–104 of his book.

In this note, I have so far been concerned with the main points at issue. I should now like to consider some minor criticisms which Professor Nordin makes of the arguments in my article. The first concerns my assumption that all factors are in perfectly elastic supply. Professor Nordin considers this " unnecessarily unrealistic ". It becomes clear from his subsequent remarks that he has not realised that I had meant that the factors were in perfectly elastic supply to the use concerned. This is, of course, not unrealistic.

The second of the minor criticisms made by Professor Nordin is that my analysis was entirely partial. But he seems to have ignored that section of my article which led to the conclusion that the amount paid for a product should be equal to its cost and to my statement that " It will be this principle which will enable us to discuss the problems of individual pricing without tracing throughout the economic system all the changes consequent upon the alteration of a single price ".

The third of Professor Nordin's minor criticisms is that my example " amounts to artificially putting together two successive stages of production ". The choice of example was, however, purely a question of exposition. What I said in my article was : " The assumption that the total costs consist of two distinct kinds, one of which enters into marginal cost while the other does not, is not essential. We could have assumed that the costs of carriage increased as additional units were carried but that the marginal costs of carriage were below the average. It will, however, aid in exposition if we keep to the original assumption ".

Finally, I should like to discuss Professor Nordin's description of multi-part pricing as " price discrimination ". I do not wish to quarrel about the use of words. I would, however, point out that in the case which I was considering in my article, differences in the amounts which are charged to consumers are exactly equal to differences in the costs of supplying these consumers and are in no way affected by differences in the elasticities of demand (except in so far as these affect the willingness of consumers to pay the total costs of supplying them). It is just conceivable that this form of pricing might be described as price discrimination : but I believe that most economists would find this description misleading. I am not suggesting that multi-part pricing may not be used in a way which is discriminatory in the sense that differences in the amount charged do not correspond to differences in costs. But the procedure I was advocating in my article was not discriminatory in that sense.

Book Reviews

The Socialist Tradition. Moses to Lenin. By ALEXANDER GRAY. Longmans, Green and Co. 1946. 523 pp. 21s.

Only those who have tried their hands at a similar task, at least on a minor scale, will be able fully to appreciate the achievement which this history of socialist doctrine represents. Such a survey, at the same time scholarly and readable, has long been much wanted as, with the possible exception of H. Bourgin's *Systèmes socialistes*, there exists no other modern book which gives an adequate picture of the development of the ideas which have come so near to ruling the world. Most of the attempts which have been made in the past in this direction were either so uncritical or so superficial that it was difficult to know what to recommend to the student or to the general reader on a subject on which to-day surely the educated man ought to have some knowledge. Professor Gray's book is likely for a long time to remain the standard work in its field.

This is not to say that the book will gratify all tastes. It is doubtful whether a fairly full history of socialism could be made readable unless it were written either with uncritical enthusiasm or with a good deal of humour and perhaps even good-natured satire, and Professor Gray's book is certainly not all uncritical admiration. But even the most impartial student would have to admit that as persons the fathers of socialism were, almost without exception, only all too queer a mixture of maladjusted cranks and phantastic idealists, whom even an occasional touch of genius cannot make intellectually satisfactory. I don't think that to those who are familiar with the history of the men discussed, Professor Gray's account will seem unjust; but those who merely know their names as those of the founders of a new faith must expect to be frequently shocked and even offended.

The sub-title of the book is somewhat misleading. The real story begins, as it ought to, with Plato, and the Old Testament provides little more than the necessary background for a sane and reasonably sceptical discussion of the reputed communism of the early Christians. Together with the following sections on the Christian Fathers this part of the book performs a useful function by dispersing some of the legends by which so much of the history of socialism is obscured. After comparatively brief sketches of the early Utopias there are helpful accounts of the views of the French eighteenth century writers, from Rousseau to Babeuf, and of Fichte, while the first full-length portrait given is that of William Godwin. Though, as in the case of the modern anarchists from Bakunin to Bertrand Russell treated in a later chapter, one may with the author feel doubt how far these theories deserve to be called socialistic, one must be grateful for this account of the anarchist tradition without which the development of socialism is scarcely intelligible.

The full treatment of the great French socialists Saint-Simon, Fourier, Louis Blanc and Proudhon and of Robert Owen gives a very true picture and a great deal of interesting detail about those remarkable men. Even in the case of Saint-Simon, in which Professor Gray has evidently not had access to the monumental study which Professor Gouhier devoted to his career shortly before the war (as vol. II of his *Jeunesse d'Auguste Comte*), it is remarkable how little all the new material brought to light by the latter has really altered the picture which could be derived from a careful perusal of the earlier sources. (There are one or two other instances where the fact that Professor Gray's book seems to have been written over a long period has had the result that some of the more recent literature has been neglected, and it is to be hoped that a new edition will soon give an opportunity to remedy these minor blemishes.)

There is much for which we ought to be grateful in the chapter on the early English socialists, from the all-too-short sections on Thomas Spence and William Ogilvie to the fuller discussion of Hall, Thompson, Hodgskin, Bray and Gray. If on these men Anton Menger and Foxwell will still remain the *locus classicus*, and although it is no longer true, as readers of *Economica* know, that of T. F. Bray "very little is known beyond the fact that his name appears on the title page of his book", this chapter is still the best discussion of their work which is easily available.

When we come to Marx and Engels no review can pretend to give more than a personal view about the degree of success achieved by the author, except that here too some of the more recent additions to our knowledge of Marx's development (particularly the various early manuscripts published by Landshut and Mayer in *Der historische Materialismus*) have been disregarded. Professor Gray's treatment seems to me both reliable and just. Yet nowhere else is his gentle irony more certain to exasperate some of his readers, and a short quotation from this chapter (p. 321) will convey to the reader a good idea of the tone of the book: "To witness Böhm-Bawerk or Mr. Joseph carving up Marx is but a pedestrian pleasure; for these are but pedestrian writers, who are so pedestrian as to clutch at the plain meaning of words not realising that what Marx really meant has no necessary connection with what Marx undeniably said. To witness Marx surrounded by his friends is, however, a joy of an entirely different order. For it is fairly clear that none of them really know what Marx really meant; they are even in considerable doubt as to what he was talking about; these are hints that Marx himself did not know what he was doing. In particular, there is no one to tell us what Marx thought he meant by 'value'." This may not be very kind; but can anyone who knows a substantial part of the Marxist literature on value deny that this is a fair description of its character?

That after the chapter on Marx and Engels the sections on Lassalle, Rodbertus and the Revisionists are a little of an anti-climax is inevitable. But together with the very useful chapters on Fabianism, Syndicalism and Guild-Socialism, which because of their more recent character have not before been similarly discussed against the background of the whole socialist tradition, they are indispensable to round off the picture.

The interesting last chapter is devoted to Lenin, and at the time the book was written Leninism undoubtedly must have appeared as the latest chapter in the development of socialism. But is it still so, and is Leninism still regarded as the guiding doctrine among any group of communists? Perhaps it is too early to answer this and we can only guess what will be the subject of the additional chapter which undoubtedly will have to be added to some later edition of this book.

F. A. Hayek.

Russlands Volkswirtschaft unter den Sowjets. By S. N. Prokopovicz. Europa-Verlag. Zürich-New York. 1944. 459 pp.

This book is by a Russian émigré of high standing; sometime professor at the University of Moscow as well as member of the Provisional Government in 1917. In his preface he deals rather severely with the European public whom he accuses of intentional ignorance of Russian affairs and reproaches with paying exclusive attention to the mistakes of the Russian government rather than to its economic achievements. He is convinced that free markets are in general doomed and will in future be replaced by planned economic systems. On the other hand he believes that the communist experiment in Russia was premature, for in that country the conditions which he considers as essential for the establishment of a planned economy—namely a high level of fixed costs and a tendency towards cartellisation—had not yet arisen. Hence, he has no hesitation in pointing out the various failures of the Russian experiment, and maintains on the whole a well-balanced scholarly attitude hardly deflected by his sympathy for the Russian experiment.

The scope of the book as well as its limitations may be illustrated by a discussion of one of its most interesting points, namely its account of the 1939 census. The statistics of the Soviet Government give no information about the population of the Union during the period from 1st January, 1933, to the 17th January, 1939. We have, however, the following forecast made in the second Five Year Plan. "The Second Five Year Plan period is a quinquennium of further reduction in mortality and a rise in the birth rate as a result of which the population is increasing from 165,700,000 as from January 1st, 1933, to

180,700,000 as of January 1st, 1938, i.e., an increase of 15,000,000 (9.1 per cent.) with an average annual increase of 17.3 per thousand." Projecting the average rate of growth assumed in this estimate through 1938 forward for one year and 16 days to the time of the 1939 census we obtain an expected population of 183,971,000 persons—13,504,000 above the number actually enumerated at that time.[1] Writing in 1944 Professor Prokopovicz seems to have been the first to disclose this extraordinary discrepancy. His analysis leads him to conclude that the Soviet Union suffered a loss of nine million of its population—or potential population—through the famine of 1933–34 owing to a fall in birth rate and a catastrophic increase in death rate. This is an important result and it is possible that with the means at his disposal the author could not have used his figures to a greater advantage. But unfortunately this only demonstrates once more what unusual degree of caution is required in the use of Soviet statistics. It did not occur to Professor Prokopovicz that since there had been no census in Russia since 1926 the figure stated for 1st January, 1933, was merely an estimate and could be quite false. Yet that seems to be the case. Mr. Frank Lorimer, who in his study quoted above has, more recently, recalculated the population series after 1926, suggests that the figure for 1st January, 1933, was 161,850,000 which is 3,850,000 less than stated by the Soviet Government. On this basis Mr. Lorimer estimates that the excess of deaths during the crisis of 1933–34 was 5,500,000.

Very interesting are also the data of Professor Prokopovicz for the planned distribution of population and that which actually established itself around 1938–1939. The population of towns was expected to rise from the figure of 34.7 millions at which the Soviet Government estimated it for 1st January, 1933, to 46.1 million by 1st January, 1938, which would lead to a projected figure of 48.4 million for 17th January, 1939. The census for this date, however, revealed instead an urban population of 55.9 millions. The rural population was planned to remain unchanged at its supposed number of 134.5 millions, instead of which the census of 1939 found it at 114.6 millions. There were thus in the towns 7½ million persons more and in the country 20 millions less than planned. We can see here the marks of a famine in which millions perished on the land while the food which they had produced was taken away from them for the benefit of the urban population. (It is curious to recall that this was the period during which the famous planned economy of Russia and the supposed abolition of exploitation of man by man in Russia exercised their greatest fascination on the Western public.)

Professor Prokopovicz finds a marked deterioration in the living conditions and real wages of workers during the period 1933–1940. Living space had already decreased from 6.0 sq. m. per person in 1923 to 5.2 sq. m. in 1932 and fell further to 4.2 sq. m. by 1937. No real wage statistics were published by the Soviet Government after 1929, by which time the real wage is stated to have risen to 116 per cent. of its value for 1913. Professor Prokopovicz quotes a Soviet statement published in England in 1938[1] claiming that during the previous 10 years the real wage had risen by 300 per cent. Professor Prokopovicz's own calculations, based on the variation of money wages and food prices leads him to an increase from 1913 (taken as 100) to 151.4 by 1928, followed by a steady decline down to 54.1 by April, 1940.

---

[1] Frank Lorimer, *The Population of the Soviet Union*, League of Nations, Geneva, 1946.

What then, we may ask, shall we make of the Soviet Government's claims of rising national income ? The figures quoted by Professor Prokopovicz for these increases are :

1st Five Year Plan 1927/28–1932	(4½ years)	82.0 per cent.
2nd Five Year Plan 1932–37	(5 years)	111.6 per cent.
3rd Five Year Plan 1937–42	(5 years)	80.3 per cent.

This adds up to a *seven*fold increase of the national income. Professor Prokopovicz points out the discrepancy between these figures and the catastrophic fall in the standard of living described by him, but he does not succeed in elucidating the contradiction.

He might have called attention to other curious facts among the statistics quoted by him. I find particularly puzzling the transport statistics which reveal striking increases from year to year both in persons and in goods carried by rail. By 1928 carriage of passengers had reached the level of 1913 and by 1937 it had increased 3½-fold. In 1937 the carriage of goods was 5 times that for 1913. We may ask why people whose standard of living was steadily declining to ever more miserable levels were seized by such a passion for travelling ? Why were increasingly vast quantities of goods transported across the country to an ever-decreasing advantage to the public ? Was all the missing wealth supplied to the Red Army ?

It is to be hoped that Professor Prokopovicz may yet enquire into such questions as these. He has proved himself a candid observer whose explorations should be given due attention by students of Soviet Russia. But his results so far have hardly justified him in accusing Western observers of voluntary ignorance concerning Russian economic achievements. No, the fault lies not with them.

M. POLANYI.

Bretton Woods for Better or Worse. By R. G. HAWTREY. Longmans, Green & Co. 1946. viii + 142 pp. 7s. 6d.

The most stimulating part of this little book is not its criticism of the International Monetary Fund but its restatement, in a more popular form, of Mr. Hawtrey's well known and controversial views on monetary policy. "It is not sufficiently recognised that depressions are caused by the *deliberate action* of central banks. That is true not only of the violent deflations of 1920–2 and 1929–31, but of those of the trade cycles experienced up to 1914" (p. 31). The central bank enjoys this power of creating good and bad trade because it can control the quantity of money and the short-term rate of interest by means of Bank rate and open market operations. When the central bank restricts credit other banks make it harder for their customers to borrow, expenditure is postponed, and production falls off. "Production generates incomes, and the decline of production means a decline of incomes. The decline of incomes is reflected in a decline of outlays and the consequent shrinkage of demand causes a *further* decline of production" (pp. 10–11). A timely alternation of cheap and dear money would suffice to maintain a high degree of economic activity, and depressions are the result of errors in timing by the central bank. The problem of the business cycle is still for Mr. Hawtrey a purely monetary one. This view has often been challenged in the past, and there is nothing in the present statement which adds to the force of Mr. Hawtrey's case.

---

[1] *The Soviet Comes of Age*, by twenty-eight of the foremost citizens of the U.S.S.R. with a foreword by Sidney and Beatrice Webb, London, 1938, pp. 173-174.

The object of monetary policy should be, in the author's opinion, to stabilise the value of the money unit, as measured by its purchasing power over labour. A large rise in wages and prices is bound to produce a reaction, bringing violent deflation and unemployment. To preserve the necessary stability, we need "an equable flow of money", that is a rate of national income and expenditure which will avoid serious unemployment without causing a general rise in money wages. "It follows that the co-operation of organised labour is needed to maintain the stability of the money unit. If the stabilisation policy works smoothly, the co-operation desired *will be no more than an abstention from any pressure for a general rise in wages*" (p. 56. My italics). We are not told what happens if the co-operation is not forthcoming, and one feels that both the theoretical and the practical problems of this part of the subject are much over-simplified.

If all countries pursued successful stabilisation policies, the work of the International Monetary Fund would be comparatively simple, and much of its *raison d'être* would disappear. In a world where such virtue in others is very doubtful, Mr. Hawtrey maintains that British policy should have aimed at stabilising the wealth value of the pound, and allowed its exchange value to find its own level on a purchasing power parity basis. He therefore strongly criticises the acceptance of the obligations to maintain stable exchange rates which membership of the Fund implies.

Mr. Hawtrey's other criticisms are threefold. First, the constitution of the Fund makes no provision for international co-operation to stabilise the wealth value either of gold or of national monetary units. Mr. Hawtrey fears that present circumstances and the present climate of economic opinion will produce a world-wide inflation followed by a world-wide depression. Against such an inflation the only safeguard is the power to make a uniform change in the gold value of all the member currencies, but this might be nullified by changes in central bank reserves, and in any case it is unlikely to be used as the principal members of the Fund have a vested interest in maintaining the price of gold. Secondly, any country which tries to stabilise the wealth value of its money unit will find itself unduly tied to deflationary forces in other countries. When other members are suffering depression they are unlikely to allow a prosperous member to devalue its currency, while even the freedom of action within 10 per cent. of the initial par may be restricted by a narrow interpretation of the obligation to refrain from competitive exchange depreciation. The scarce currency clauses are intended to restrain one member from imposing too great a deflationary pressure on others, " but if the intention is to deter a member from letting its currency become scarce, the deterrent will not be effective unless central bankers are aware of the consequences of their own actions and admit responsibility for them " (p. 90).

Some of the critical arguments, such as that just quoted, are not very convincing, and one feels that Mr. Hawtrey does less than justice to the opportunities afforded by the Fund for international co-operation. He does, however, throw the weight of his opinion into the scales against the bilateralists ; he is convinced that multilateral trade is essential to a recovery of British prosperity, and he is therefore very little concerned at the abandonment of the bilateralist practices built up by the Sterling Area during the war. Mr. Hawtrey approaches the subject from his own particular standpoint and with his own terminology ; he brings to it the incisive logic and the elegant style which we have grown to expect ; and he presents us with a conclusion which we can accept even if we disagree with some of the argument. The Fund will only be successful if its principal members are able to preserve reasonable stability in their domestic economies.

E. VICTOR MORGAN.

Bank for International Settlements: *Sixteenth Annual Report.* Basle. July, 1946. 70 pp.

In order to revert to its normal date for publication, the B.I.S. issued in July, 1946, its 16th Annual Report. This covered nominally the year ending 31st March, 1946, but as the 15th Report had surveyed affairs down to about October, 1945, the Bank's latest review is concerned almost entirely with post-War developments. It makes, as always, very good reading, and summarises in clear and succinct form the major problems and the progress of the Western world in the early throes of reconstruction.

It is true that for any contemporary observer, even when equipped as is Dr. Per Jacobsson, the task of rendering down this untidy economic cosmos into fifty pages is pretty hopeless, and little more than thumbnail sketches can be attempted. (It may be added that the reviewer's job, to concentrate this essence into six paragraphs, is more hopeless still.) But the method adopted in the Report, of illuminating a limited number of major topics by the light of the experience of preceding crises, has justified itself by the result. In fact, three main groups of topics emerge, concerned respectively with price-control, reconstruction planning, and the prospects of a slump.

A discussion of the extent to which price-control was successfully maintained during World War II is followed by a study of the greater problems of maintaining such control in the immediate post-war period. The suggestion emerges that the continuance of price-control, however necessary politically, may be economically dangerous, as stifling the natural forces tending to direct the processes of reconstruction. " An elastic price-system ", says the Report (p. 12), apropos the sluggishness of the German war effort, " has received more vindication during the second world war than is generally realised." The particular instance cited is perhaps of doubtful value as a proof of this proposition, in view of the extent to which German output was also curtailed by complacency and by administrative rigidities; but the general principle was worth re-stating in a planned and planning world.

There follows a sympathetic review of the efforts at reconstruction which have been made in Anglo-Saxon countries and in Western Europe, with special studies in the supply of food-grains and of coal; the latter is particularly cogent. Less detailed surveys of the progress made in Eastern Europe again emphasize the vast gap in European statistics which is created by the reticence of the U.S.S.R. This section leads up to the reflection that " Although the problems facing the various governments after the war were in many respects similar in nature . . . yet the results of the first year's efforts show remarkable dissimilarities " (p. 41), and it is a virtue of the discussion that the nature and causes of these divergences are clearly brought out.

The third main section of the Report deals with fears of a coming slump. It is argued that a real depression is rendered unlikely, at least for the next three or four years, by the greater stability of prices from 1939 to 1946 than during 1914–1920, and by the present low level of private indebtedness. Although a recession is thereafter to be expected, the changes in the economic environment which have taken place in the past ten years are adduced to suggest that it will be different in form from either the 1920–22 or the 1930–33 depression. With which rather negative opinion the Report is cautiously content, although the reader could wish that it had been willing to back its prophetic vision a little more definitely.

The customary short review of the Bank's domestic affairs brings out the great importance to both its assets and its income of the German securities arising from the Hague Agreements of 1930/31. Reference is also made to the departure of the President, Mr. McKittrick, after a term of office lasting nearly seven years.

J. K. HORSEFIELD.

California Business Cycles. By Frank Le Roy Kidner. University of California Press. 1946. 131 pp. $2.50.

This volume represents one of the most recent additions to the growing library of monographic studies representing the work of the latter day institutionalists in the United States. The pattern for this book, including its choice of subject and methodology, clearly owes much to Professor Wesley C. Mitchell, and the debt is duly acknowledged by the author.

Professor Kidner has chosen to analyse the economy of California, roughly during the period between the two World Wars. At least during the time considered in the study, the economic structure of California was very similar to that of the rest of the country. The chief peculiarity of the Californian economy rests in the rapidity with which it has developed after a relatively late start. The study is thus in a position to shed some light on the stability of a rapidly growing economy as well as the relative stability of a nation and one of its parts. Throughout the book the economy of the United States has been employed as the standard of comparison whereby the economy of California may be described.

Professor Kidner indicates early in the volume that the economy considered is one in very special circumstances, so the scope for generalisation from the data presented in the book is severely limited. He indicates his belief, moreover, that since business cycle policy is usually administered on a national basis, the usefulness of a study of cyclical fluctuations within any political subdivision of the nation is severely limited. However, in the true spirit of institutionalism, he prefers to work inductively, compiling, systematising and examining the available relevant data, and only then drawing theoretical conclusions (if any) and considering further related topics for study. After careful scrutiny of the data, the author concludes that California cycles are characterised by slightly larger amplitudes than those of the nation. However, the timing of cycles in California and in the nation as a whole is quite similar.

One possible hypothesis which emerges is that regional cycles may tend to approximate national fluctuations more closely when the movement in the larger economy is a major one. A possible instance is the case where the California activity seems to have differed markedly from that of the nation as a whole only during the minor cycle in the middle of the '20's.

It is interesting to note that there is a somewhat greater similarity in the movement of business activity between California and the rest of the United States in periods of contraction than is the case during periods of expansion. The author suggests that this may perhaps be explained by the argument that when anticipations are generally favourable and a significant volume of investment is being undertaken, new capital will naturally find its way to expanding areas, whereas when anticipations are pessimistic investment will tend to fall everywhere in the economy.

Professor Kidner makes good use of the reference cycle technique, a device developed by the National Bureau of Economic Research to indicate the degree to which cycles in different regions and special fields of endeavour tend to coincide with what may be considered *the* business cycle. The detailed tables should prove invaluable both for content and as a model to those desiring to do further research in this field. In particular, the application of the technique of comparing specific and reference cycles is admirably illustrated.

All in all, this study is a revealing example of the methods and ideals of modern institutionalism in all its strength, and all its weaknesses. It might be interesting to speculate, however, to what extent this trend of latter day institutionalism is in accord with the robust spirit of Thorstein Veblen.

William J. Baumol.

Books Received

American Competitive Enterprise System. Chamber of Commerce of the United States, Washington. 1946. 24 pp. 10c.

Andrus, J. R.: *Basic Problems of Relief Rehabilitation and Reconstruction in South-East Asia.* Indian Council of World Affairs. Oxford University Press. 1946. 74 pp. 5s. 6d.

Bain, J. S.: *The Economics of the Pacific Coast Petroleum Industry.* Part 3. University of California Press. 1947. xi, 130 pp. $3.00.

Baykov, A. M.: *Soviet Foreign Trade.* Princeton University Press, New Jersey. Oxford University Press. 1947. x, 100 pp. $2.00, 11s. 6d.

Bernacer, Tormo G.: *La Doctrina Funcional del Dinero. Consejo Superior de Investigaciones Cientificas.* Instituto de Economia Sancho de Moneada. 1945. 364 pp.

Bettelheim, C. H.: *Les Problèmes Theoriques et Pratiques de la Planification.* Presses Universitaires de France, Paris. 1946. 349 pp.

Brown, R. N. R.: *The Principles of Economic Geography.* 5th Edition. Sir Isaac Pitman & Sons Ltd. 1947. xv, 208 pp. 7s. 6d.

Crenshaw, O.: *The Slave States in the Presidential Election of 1860.* The Johns Hopkins University Studies in Historical and Political Science. The Johns Hopkins Press, Baltimore. 1945. xiv, 332 pp. $3.00.

Daggett, S., and Carter, J. P.: *The Structure of Transcontinental Railroad Rates.* University of California Press. 1947. viii, 165 pp. $4.00.

Department of Commerce, University of Melbourne. *Problems of Distribution in Australia.* No. 1. 1946. 40 pp.

Department of Reconstruction and Supply. Economic Research Branch. *Chart Book of Employment and Pay-rolls in Canadian Industries.* Ottawa. 1946. Charts, No numbers to pages.

Department of Reconstruction and Supply. *Manpower and Material Requirements for a Housing Programme in Canada.* Edmond Cloutier, Ottawa. 1946. 137 pp. 50 cents.

Duberge, J.: *Le Controle des Prix en France.* Librairie Generale de droit et de Jurisprudence, Paris. 1947. 203 pp.

Everett, J. R.: *Religion in Economics.* King's Crown Press, New York. Oxford University Press. 1946. xiii, 174 pp. $2.50, 14s. od.

Ganguli, B. N.: *Reconstruction of India's Foreign Trade.* Indian Council of World Affairs. Oxford University Press. 1946. vii, 244 pp. 12s. 6d.

Gould, J. M.: *Output and Productivity in the Electric and Gas Utilities 1899–1942.* N.B.E.R., New York. 1946. xi, 195 pp. $3.00.

Gruber, K.: *Voraussetzungen der Vollbeschäftigung.* Spring-Verlag, Vienna. 1946. 89 pp. S.Fr. 6, $1.40.

Gruenbaum, L.: *Outlines of a Development Plan for Jewish Palestine.* Jewish Agency for Palestine Economic Research Institute. 1946. xvi, 171 pp.

Inter-Allied Reparation Agency. *First Report of the Secretary General for the Year 1946.* Brussels. 1947. viii, 67 pp.

Kakade, R. G.: *A Socio-Economic Survey of Weaving Communities in Sholapur.* Gokhale Institute of Politics and Economics, Poona. 1947. x, 221 pp. Rs. 10 and 20s.

Labour Party Year Book, 1946–47. Research Department of the Labour Party. 1947. vii, 566 pp. Cloth 8s. 2d., Paper 6s. 8d.

League of Nations. Economic, Financial and Transit Department. *The Course and Control of Inflation.* Allen & Unwin Ltd. 1946. iv, 136 pp. 5s.

Les Caractères Contemporains de Salaire. Pragma. Presses Universitaires de France, Paris. 1946. 169 pp. 240 francs.

Lynch, D.: *The Concentration of Economic Power.* Columbia University Press. Oxford University Press. 1946. x, 423 pp. $5.50.

Mackay, R. A. (ed.): *Newfoundland.* Oxford University Press. 1946. xiv, 577 pp. 30s.

Masani, M.: *Picture of a Plan.* Oxford University Press. 1946. 63 pp. Rs. 2. 2s. 6d.

MEDICI, G.: *L'agricoltura e la Riforma Agraria.* Rizzoli Editore. Rome. 1946. 139 pp. L.200.

MEINHARDT, P.: *Inventions, Patents and Monopoly.* Stevens & Sons Limited. 1946. xvi, 352 pp. 25s.

MILL, J. S.: *On Liberty* and *Considerations on Representative Government.* Basil Blackwell. 1946. liv, 324 pp. 8s. 6d.

MORGANTHAU, H. J.: *Scientific Man vs. Power Politics.* University of Chicago Press. Cambridge University Press. 1946. ix, 244 pp. 16s. 6d.

N.B.E.R. *Economic Research and the Development of Economic Science and Public Policy.* New York. 1946. viii, 198 pp. $1.00.

N.I.E.S.R. *Annual Report, 1945–46.* 1947 24 pp.

NORMANO, J. F.: *The Spirit of American Economics.* Dennis Dobson Ltd. 1946. 251 pp. 15s. 0d.

NUFFIELD COLLEGE: *Training for Social Work.* Oxford University Press. 1946. 63 pp. 2s. 6d.

ONARAN, M. H.: *The Internal and External Value of Our (Turkish) Currency.* Basbakanlik Devlet Matbaasi, Ankara. 1946. 61 pp.

PIGOU, A. C.: *A Study in Public Finance.* Third Edition. Macmillan & Co. Ltd. 1947. xviii, 285 pp. 16s.

RADIN, G.: *Economic Reconstruction in Yugoslavia.* The Carnegie Endowment for International Peace. King's Crown Press, New York. Oxford University Press. 1946. ix, 161 pp. $2.50. 16s. 6d.

SHAH, K. T.: *Priority in Planning.* The National Planning Committee. 1946. 43 pp. R. 1–4.

SIMEY, T. S.: *Welfare and Planning in the West Indies.* Oxford University Press. 1946. xi, 267 pp. 15s.

STABINGER, A.: *Die Französiche Währungspolitik von der Stabilisierung bis zum Ausbruch des Zweiten Weltkriegs (1928–1939).* A. Francke Ltd. Co., Berne. 1946. viii, 183 pp. S.Fr. 12.80.

SWEEZY, P. M.: *The Theory of Capitalist Development.* Dennis Dobson Ltd. 1946. xiv, 398 pp. 18s.

TATE, W. E.: *A Hand-List of Buckinghamshire Enclosure Acts and Awards.* Clerk of the Bucks County Council. 1946. vi, 46 pp. 2s. 6d.

VONTOBEL, KLARA: *Das Arbeitsethos des Deutschen Protestantismus.* A Francke Ltd. Co., Berne. 1946. 162 pp. S.Fr. 12.

WU, Y. L.: *China's Economic Policy.* Sino-International Economic Research Centre, New York. 1946. 60 pp.

Made and Printed in England by The Hereford Times Ltd., General Printing Works (T.U.), London and Hereford. L4294.

Cheap Money Policy

By F. W. Paish

In its simplest terms, a cheap money policy is a policy of driving down, or preventing a rise in, interest rates by increasing the quantity of money. The effects of an increase in the quantity of money are not always the same. They depend mainly on two things: first, the point in the system where the money is injected; and second, the state of business confidence ruling at the time. Money is parted with mainly for two purposes—spending and lending (under lending is included the purchase of variable dividend securities), and we can classify money held into two categories according to the use to which it is intended to put it—money-to-spend and money-to-lend. Now if we increase money-to-spend—if, for instance, each of us one morning found an official envelope on our breakfast plates containing ten one-pound notes, with a polite letter from the Government asking us to buy ourselves a present with it—the result will be a rapid increase in demand for goods and services. If there is widespread unemployment of resources at the time, this will normally lead to an increase in output with little or no rise in prices, and probably to an increased demand for capital to finance the increase in output and a tendency for interest rates to rise. Only if business confidence is at a very low ebb indeed will the shopkeepers or others whose stocks are depleted by the increase in demand use their extra receipts for repaying debts instead of buying new supplies, so that their creditors, in seeking new channels for investing the money repaid, will tend to force down the rate of interest. If, on the other hand, resources are already fully employed, the increased demand will merely cause a rise in prices and, unless interest rates are raised sharply or other measures are taken to check it, will start or intensify a monetary inflation.

In contrast to this, when money-to-lend is injected into the system its immediate effect will be to reduce interest rates. Where business confidence is low, it may be a long time before the lower rates of interest encourage increased borrowing for expenditure on additional capital goods, and interest rates can be forced down a long way before any large part of the new money becomes money-to-spend. When, however, business confidence is high, the new money will be quickly borrowed and spent, with a resultant increase in output if there are many unemployed resources and an increase in prices if there are not. In conditions of very high business confidence, it is possible that an increase in the supply of money-to-lend may very quickly induce a more than proportionate increase in the demand for it, and, if full employment has been reached, may generate a runaway inflation just as certainly and almost as quickly as an increase in money-to-spend.

If, therefore, the increase in the quantity of money is designed to force interest rates down to a low level, the most favourable time is when unemployment is high and business confidence low.

In a developed monetary and banking system, the usual point for the initial injection of additional money is the central bank. By increasing the central bank's holdings of Government securities or other assets it is possible to increase the total of bankers' deposits with the central bank and therefore the cash reserves of the commercial banks. Since banks do not normally use excess cash reserves to finance their own expenditures, these are almost invariably money-to-lend, and the banks' endeavours to find a profitable investment for them tend to reduce interest rates. Not all interest rates, however, will be affected equally. Even apart from those rates which are subject to a greater or smaller risk of default, there is an almost infinite series of interest rates varying with the contractual duration of the loan, from a few hours to the infinitely long. For our purposes it will suffice if we examine the effects of an increase in banks' cash reserves on three rates only—the Treasury bill rate, the rate for long-term gilt-edged securities and the rate for overdrafts.

Let us take the bill rate first. The market for bills is a very limited one. The demand for them is almost entirely from banks and from discount houses financed on short-term bank loans. In London the banks, whether British banks or the London offices of overseas banks, always like to keep at least 20 per cent. of their assets in bills, and short loans against bills, whatever the rate of interest earned on them, and also find them the easiest and safest asset to expand quickly whenever they have a surplus of cash to invest. We thus find not only that bill rates are the first to fall as a result of an increase in banks' cash reserves, but that a large part of the demand will continue even if bill rates fall to a very low level. On the supply side, the available supply of commercial bills has in recent years been relatively small and insensitive to changes in the rate of interest, and though very recently there have been some signs of borrowers switching from overdrafts to London acceptances, the additional volume of finance bills so created is still absolutely small. The main variations in the volume of bills on the market are in Treasury bills, and by increasing the quantity of the banks' cash reserves and at the same time limiting supplies of Treasury bills, the Government can easily force the bill rate down to a level which barely covers the cost of carrying them. Up to 1931 the presence of foreign money on the London market made the demand for bills much more elastic, for if short-term interest rates fell in London relatively to overseas, overseas banks would withdraw part of their balances to seek more profitable employment elsewhere. But after 1931 international movements of short-term funds largely ceased to be influenced by differences in interest rates and were motivated almost entirely either by political fears, or by hopes or fears of changes in rates of exchange; while since 1939 movements of capital have, of course, been subject to control.

The power to force down rates of long-dated securities is much more limited. While the security holdings of the banks are absolutely large, they constitute only a small fraction of those held by other institutions and the general public. Any given expansion in the banks' holdings will therefore have a much smaller effect on long-term rates than it has on bill rates. Further, a fall in gilt-edged rates will cause some holders to sell them in order to obtain a larger yield in industrial debentures, preference shares, or possibly ordinary shares, while even in periods of inactive trade, low long-term rates will bring an increased willingness to finance the purchase or construction of highly durable assets, such as houses, with borrowed money or out of the proceeds of sales of securities. Even after 1931, the long-term capital market was probably less insulated from rates abroad than was the short-term market, and very low long-term rates were likely to increase the demand by some of the remaining credit-worthy overseas borrowers for new loans. All in all, while it is quite possible to force long-term rates down a considerable way, it would be extremely difficult, if not impossible, to depress them, even in the most favourable circumstances, to the levels reached by short-term rates.

There is one further factor to be considered, which may work in either direction. This is the effect of speculation. So long as interest rates are falling and prices of securities are rising, the movement will be assisted by those who hope for capital profits from its continuation. The incentive to look to capital profits rather than to income is increased by high rates of taxation on incomes without corresponding taxes on capital profits. This incentive reaches almost absurd levels in the case of the very rich man paying surtax at maximum rate, for whom sixpennyworth of capital appreciation is worth a pound of gross income. But as soon as the rise is checked, and security prices look as if they are more likely to fall than to rise further, speculation works in the opposite direction. When interest rates are low, it takes several years even of gross income to make up for the capital loss due to a small rise in interest rates, while with high rates of tax the number of years of net income lost by capital depreciation will be very much larger. If we take a 2½ per cent. rate for irredeemable securities, and ½ per cent. as the gross rate obtainable on deposit account at a bank, the difference in annual net yield, with income tax at 9s. in the pound, is only £1 2s. 0d. The capital loss from a rise of only ¼ per cent. in the rate of interest, from 2½ per cent. to 2¾ per cent., is just over £9. Thus even this small rise in the rate of interest would wipe out the whole of the net yield on the securities for over eight years, and if an investor expected a rise in interest rates of even this magnitude within the next eight years it would pay him better to keep his money on deposit at a bank. For a very wealthy man, paying the maximum rate of surtax on part of his income, the net yield is only 1s. 3d. per £100, or 1s. per £100 more than on bank deposit. At this rate it would take him over 180 years to make good the capital loss due to a rise of ¼ per cent. in the rate of interest. Thus a surtax payer cannot afford to take the risk of capital depreciation unless it is balanced by an at least equal chance of appreciation. The result of this is that as soon as a further fall in interest rates becomes unlikely, surtax payers and, to a somewhat smaller extent, income tax payers, must take their profits, even if it means getting only ½ per cent. interest on bank deposit for years together. Thus a high level of security prices, reached with the help of speculative purchases, may prove very difficult to consolidate once the rise ceases.

The third type of interest rate to be considered is the overdraft rate. Overdrafts, although repayable technically on demand, are rarely called in unless there is a serious change for the worse in the financial position of the borrower. They constitute a very convenient and economical form of borrowing, and for a borrower with fluctuating requirements may well prove cheaper than a loan for a fixed period at a much lower rate of interest. Thus the demand for overdrafts is not very much affected by moderate changes in the rate of interest, and is very much more dependent on the level of business activity. Overdraft rates have indeed fallen below their former minimum of 5 per cent. as a result of competition between banks, but their level is similar to that of rates on industrial debentures rather than to bill rates. In the early stages of a cheap money policy a good deal of the money created comes back to the banks in repayment of overdrafts, and only when business activity has shown pronounced signs of recovery do overdrafts begin to expand. When they do, their expansion involves a more rapid conversion of the banks' money-to-lend into industry's money-to-spend, and is a sign that the credit expansion is now being converted into an expansion of money incomes.

Before leaving this general survey of the question, there are two other matters that must be mentioned. The first of these is not strictly relevant to the subject of this article, but since it has been widely discussed in the journals in the same connection it must be given some mention here. This is the question of changes in the holdings of securities by Government departments. There are now various large Government and semi-Government funds whose investment policy is presumably decided in accordance with the views of the Treasury. Of these, the most important are the Issue Department of the Bank of England, the Exchange Equalisation Account and the Unemployment Insurance Fund. What Government securities are held in these funds is in itself purely a matter of inter-departmental finance. If for instance the Issue Department of the Bank of England, on which all profits have since 1928 gone to the Treasury, holds 2½ per cent. stock instead of ½ per cent. Treasury bills, it only means that the Treasury pays out more interest during the year and gets back more profits on the note issue at the end of it. But while the actual composition of the assets in these funds is immaterial, changes in their composition can provide a convenient addition to the Treasury's technique for issuing and repaying loans, while at the same time making it difficult for observers to realise what it is doing. Thus if the departments surrender Treasury bills to the Treasury in exchange for long-dated securities, it looks like a funding loan, whereas nothing of any real importance has occurred ; conversely, if the departments sell long-dated securities to the public and buy Treasury bills with the proceeds, thus enabling the Treasury to borrow less on short term from the banks, a funding operation has occurred, though the total of the Treasury's floating debt will be unchanged. Similarly, if the departments' holdings of long-dated securities are converted into Treasury bills issued for that purpose, it looks as if an expansion of the floating debt had occurred, whereas nothing real has happened ; while if the departments sell their Treasury bills to the banks (or, more realistically, have them paid off out of the proceeds of additional Treasury Deposit Receipts[1]) and buy long-dated securities from the public with the proceeds, an unfunding operation has taken place although the Treasury returns show the floating debt as unchanged.

The Treasury seems habitually to use the departmental funds both to support the market for long-dated securities and to facilitate the making of new long-dated issues and especially conversion operations. In the case of a new issue, the departments act as underwriters, taking up any amounts not absorbed by the public and selling them again gradually over a longer period. In a conversion operation their rôle is even more important. As the old loan approaches maturity it becomes equivalent to a bill, and in view of its relatively high yield becomes an attractive money market investment. Its yield for the remainder of its life therefore falls below the long-term rate, and all intelligent long-term investors sell it before maturity. But its new owners do not wish to hold long-term securities, and will therefore tend to take the cash option instead of converting into the new loan. Thus the Treasury will be faced with a poor response to its conversion offer and will be obliged to find the cash to pay off a large part of the maturing loan. To prevent this the Government departments buy up a large proportion of the maturing loan in the months before the conversion operation is due, convert their holdings into the new loan, and then (if they can) sell out the new loan gradually to the public, replacing it with Treasury bills in preparation for the next operation.

While it is interesting, and for some purposes important, to try to ascertain what the Treasury is really doing, as opposed to what it appears to be doing, it should be emphasised that all this is really only technique. What really matters from our point of view is what the effect of any such operations is on the volume of bank deposits, and this cannot be concealed by any such legerdemain. When the Treasury has to borrow more on short term from the banks in order to provide the departments with funds to support the long-term market, the effect will show in the bank figures, and if we confine our attention to these we shall not be misled.

---

[1] See below, p. 174.

There is one further consideration which must be taken into account in interpreting the effects of a rise in banks' deposits, and that is the variations in the size of foreign short-term balances in London. In so far as these are held in Treasury bills there is little difficulty, for the Exchange Equalisation Account releases, or the Treasury issues, Treasury bills in return for the foreign exchange. But when the foreign balances are held in the form of bank deposits, the cash reserves and other assets of the banks must be allowed to increase sufficiently to create the necessary balances for the foreigner to hold; otherwise they will take balances away from residents and tend to reduce the quantity of money available for other purposes. The creation of additional bank deposits equal to the increase in foreign balances held in that form is therefore not inflationary, but anti-deflationary.

Though there have been various periods of cheap money in this country, notably in the middle nineties of the last century, I do not think that we can trace the history of cheap money policy in the sense of a forced expansion of credit designed to reduce rates of interest, back earlier than 1932. Until Britain's departure from the gold standard, banking policy had to be directed to safeguarding the gold reserve, while during the period between 1919 and 1925 policy was in general directed towards a return to the gold standard at par. But after 1931 the Bank was released from its pre-occupation with foreign exchange rates and its gold stock, and was able to direct its policy in the light of purely internal considerations. On looking back from the standpoint of 1947, we can now see that the cheap money policy, so publicised at the time, was carried out, by present day standards, with remarkable moderation. The conditions were exactly suitable for it—a low level of business confidence, a high level of unemployment, and virtual insulation from considerations of the effects of the policy on international movements of short-term capital. Yet the policy was enforced for less than a year, from the spring of 1932 to the beginning of 1933. During this period, the banking figures present a classical example of the sequence of events—the rise in Bankers' Deposits at the Bank of England, the rise in the cash reserves and cash ratios of the clearing banks, the rapid rise in discounts, the rather later and slower rise in investments, party offset by a fall in advances, and the net rise in deposits. Between March 1932 and March 1933 the total of deposits rose by nearly £250 million, while the ratio of average bank deposits to national income rose from 50 per cent. in 1931 to 54 per cent. in 1932 and 1933. As a result of this reinforcement of the natural tendency towards lower interest rates, together with an intensive propaganda campaign and a temporary suspension of new capital issues, some £2,000 million of 5 per cent. War Loan were successfully converted to a 3½ per cent. basis. But thereafter, in a situation in which it may be doubted if the present Chancellor of the Exchequer would have been content to hold his hand at any level above two per cent. for long-dated securities, the Government of the day was content to follow a very conservative policy. Although between 1932 and the spring of 1938 the authorities increased their gold holdings by some 90 million ounces, worth, at 1938 prices, well over £600 million, the greater part of the gain was sterilised in the Exchange Equalisation Account, and the assets of the Bank of England were allowed to rise by only about £170 million. The greater part of this went to expand the note circulation, in response to the demands of an expanding national income, and after the end of 1932 Bankers' Deposits at the Bank of England rose hardly at all. Clearing bank deposits rose less in the five years to 1938 than they had in the preceding twelve months, and it may be doubted if such increase as did occur was more than adequate to provide for the increase in foreign-owned deposits. Long-term interest rates continued to fall slowly until 1935, but the decline was probably no greater than can be ascribed to the natural consequences of the depression, and no effort seems to have been made to check the subsequent rise in rates in 1936–38. The gold purchases of the Exchange Account were mainly financed by long-term loans, with the result that, when gold flowed out in 1934 and 1938, and the Exchange Account took up bills with the proceeds, there were acute bill famines in the market in the springs of 1935 and 1939, to the great discomfort of the banks and the discount market.

The cheap money policy again became important during the war of 1939–45—the first war on record financed without a rise in interest rates. This was partly because a much larger proportion of the cost was paid for out of taxation than in 1914–18—over 50 per cent. as compared with under 30 per cent.—and partly as a result of the help received from overseas in the form of lend-lease and the accumulation of sterling balances; but even after allowing for these forms of finance, it is clear that the Government was able to reconcile a position of very high employment with low interest rates only by means of the development of a very elaborate system of controls over the transfer and expenditure of money. It was thus able to prevent a potentially inflationary situation from getting out of hand, and to prevent prices from rising as much as in 1914–18, when the interest rate was so much higher.

The system of controls comprised both financial restrictions on the export and borrowing of capital, and physical controls on the sale and purchase of goods and services, including price controls, rationing, the allocation of materials, the licensing of new construction or repairs, the control of engagements and the direction of labour. By means of these controls money was robbed of much of its function, and people were prevented from spending more than a part of the money they received as income. They were encouraged to lend the balance back to the Government, but if they preferred to hoard it, it did not really matter, for then the Government could create additional money by borrowing from the banks without causing inflation. On the side of technique, the Government facilitated the business of borrowing from the banks by introducing Treasury Deposit Receipts, which were, to all intents and purposes, compulsory loans from the banks at very low rates of interest and in a form a good deal less liquid than Treasury Bills. By these means the Government was able to keep the long-term rate of interest, throughout all but a few months early in the war, at a level well below that of 1937–38, and only slightly above that of 1934–36.

In applying this technique of keeping interest rates low by paying people in money of which they can spend only a part there are two important difficulties. One of these is the danger of evasion, either by breaking the law by buying and selling at levels above the official price—in other words, the problem of the black market—or by extending activities outside its scope. The other is the danger that people will get tired of working to earn money they are unable to spend on buying what they want—that is to say, the problem of incentive. In war-time the urgency of the common danger and the patriotic incentive both to work and to honesty help to keep these dangers in check; and in war-time the public will put up with many restrictions on their liberty that they will not tolerate in peace-time. With the coming of peace these conditions cease to apply, and the difficulties of reconciling a very low rate of interest both with full employment and with an absence of inflation are greatly increased.

In spite of the greatly increased difficulties, however, the Chancellor of the Exchequer resolutely pursued a policy of still cheaper money. He used two principal methods, the monetary and the psychological. On the monetary side, between January 1946 and January 1947 the deposits of the eleven clearing banks were made to rise by almost exactly £900 million, from £4,729 million to £5,629 million, or at more than twice the average war-time rate of expansion. That this expansion was forced on the country, in excess of the requirements even of the rapidly expanding national money income, is suggested by the rise in the ratio of deposits of nine clearing banks to the national income to over 60 per cent. in 1946 and probably 65 per cent. in 1947—or far above the level reached in the expansion of 1932 under very different conditions of trade activity.

On the psychological side, the measures taken consisted mainly of promises (or threats) of a further fall in interest rates in the near future, thus stampeding speculators, anxious for quick capital gains, into further purchases of existing securities. The rise in the price of these was quickly followed by an issue of new securities carrying (except for one miscalculation in May, 1946) a rate of interest low enough to consolidate the preceding rise in security prices. In this way the yield on irredeemable Consols was brought down from about 2⅞ per cent. in August 1945, to just over 2½ per cent. in January

1947. So long as the Chancellor was prepared to borrow from the banks at ½ per cent. or ⅝ per cent. any money he could borrow from the public on the terms he offered, he could continue to force the pace. But it took a credit expansion of £900 million to bring the rate down by under ½ per cent. to 2½ per cent. What degree of further expansion might it not have required to bring it down from 2½ per cent. to 2¼ per cent. ?

Meanwhile we must take stock of the gains and disadvantages of this policy. In the first place, it has, of course, saved the Treasury a certain amount of money for interest. But the savings on the cost of long-term loans in the first years of lower interest rates are comparatively small, unless, as in 1932, there is a conversion operation of unusual magnitude. It is stated that the saving on interest on long-term loans in 1945 and 1946 was £6.4 million gross, or say £3½ million after payment of income tax and surtax. If we compare this saving with the profits made from capital appreciation during the year by holders of securities with many years still to run, I think we shall agree that if Dr. Dalton was the rentier's enemy, he was much more the speculator's friend. A second advantage, at least from the point of view of the present Government, is that a permanent excess of demand over supply, held at bay by rationing and price control, is a considerable guarantee against any future outbreak of unemployment due to lack of demand, for any temporary falling off in demand can be quickly restored by a relaxation of the controls. And a third advantage, again especially from the point of view of the present Government, is that the present system incidentally provides for a much more equal distribution of real income than is easily obtained under a price system ; for the maximum allowable consumption of many commodities is within the reach of most money incomes and the additional money incomes of the better-off section of the population have only a limited use.

Against these advantages we must set the difficulties caused by the fact that there is too much money in the system and we have the phenomenon of too much money chasing too few goods. The ideal solution would be a large and rapid increase in the supply of consumer goods without a corresponding further increase in money incomes. Unfortunately this solution is rendered impossible by the fact that we must devote a much larger proportion of our available resources than before the war to providing goods for export and to internal capital construction and reconstruction. Alternatively we can continue indefinitely the present system of holding the potential inflation in check by means of controls. But it is becoming increasingly clear that the present controls are inadequate for their task. They can probably continue to prevent a dangerously rapid rise in prices, but now that direction of labour has been almost entirely abandoned they are incapable of directing resources into the industries where they are most wanted. Since prices of nearly everything are held below the point which would equate demand with supply, nearly anything can be sold, and consumers have no longer the power they had under the price system of directing resources into the production of the things they want relatively most by making those industries relatively the most profitable. Thus there is to-day no incentive to produce the things the public wants more rather than those they want less—to produce sheets rather than lamp-shades. To rely on appeals to industrialists and workers to produce those things which are most needed, rather than those which, in our present system of partial controls, pay them best to produce, is like appealing to the better nature of water to make it run uphill. Indeed, as more and more channels of uncontrolled expenditure are opened up by the pressure of the excess money seeking an outlet we may expect to find the maldistribution of resources becoming worse rather than better.

What are the possible cures for this unfortunate state of affairs? One remedy would be the imposition of wider and more effective controls. If the Government had the legal powers and the political authority, it could direct resources into those channels which it considered most socially desirable, in the same way as we are still directing young men into the armed forces. This method would require a still larger number of civil servants to run the additional controls, thereby reducing still further the number of workers engaged on actual production, and would create a permanent threat to those personal liberties which this country is supposed traditionally to cherish. It may be doubted whether, except for a limited period of the greatest emergency, the country would tolerate in peace-time the stringency of the restrictions which would be required.

The only other possible remedy appears to be the restoration, at least in part, of the functions of the price system in distributing resources in accordance with the demands of consumers, including, of course, the Government. But to remove or relax the controls while the public has more money than it can be allowed to spend in competition with the Government's reconstruction programme would mean opening the gates to inflation. In this country we cannot hope for such a rapid rise in the supply of goods as occurred in the United States, and even there the withdrawal of controls resulted in an undesirably rapid rise in prices of many commodities. This means that, in preparation for such a relaxation of controls, some means must be found for curtailing the public's excess of purchasing power.

One way of doing this would be to reverse the process of credit expansion—to reduce the assets of the Bank of England, cut down the cash reserves of the clearing banks, compel these banks to sell investments and refuse overdrafts, and so reduce the swollen total of bank deposits. Such a policy would force a sharp rise in rates of interest which, if carried far enough, would compel the postponement of many schemes of capital construction and release resources for an increase in the output of consumer goods. It might very well also lead to a financial crisis, a widespread loss of business confidence, and a severe, if temporary, trade depression. At best it would involve delay in the restoration of the country's capital, and at worst a period of serious unemployment. Nevertheless, if there were no other alternative to the conversion of England into a slave state, it might be better to choose an old-fashioned deflation with all its temporary discomfort.

But it seems possible that there is another way out of our difficulties —unpleasant indeed, but preferable to either of the courses we have so far considered. As has been pointed out, our difficulty at the moment is to find the necessary resources both to satisfy the public's demand for consumption goods and to fulfil the Government's programme for reconstruction. Let us suppose, for argument's sake, that everyone in this country was suddenly smitten with a desire to save every penny he possibly could—to restrict expenditure to the absolutely essential and resolutely to cut out every non-essential comfort or luxury—and to lend the money so saved to the Government for re-building the country's depleted capital. We should then see a great fall in the demand for the products of the less essential consumption goods industries and a release of the resources employed therein for employment either in the more essential consumption goods industries or in the industries making capital goods or goods for export. Such a rise in voluntary savings, despite the heroic efforts of the National Savings Movement, is unfortunately in the highest degree unlikely. But a very similar result might be obtained if the Government took more of our money away and saved it for us, by investing it in the production of the extra capital goods we need to rebuild the country's productive capacity. Of course, at the same time the Government should also cut its own luxury expenditure, and limit its own payments to those essential to national safety and recovery, however unpopular some of its cuts might be. If by means of increased taxation and reduced expenditure the Government could achieve a budget surplus of, say, £500 million a year, it would go a long way towards bringing the net incomes of the public into line with the available supply of consumption goods and simultaneously supply a large part of the capital needed to finance the country's reconstruction. At the same time, by relaxing the pressure of excess purchasing power, it would permit a substantial diminution of controls, thus setting free for useful work those, both in Government employment and in industry, who now have to administer them.

Any increase in the present level of taxation, or even its maintenance at its present height, will inevitably raise serious difficulties on the side of incentive. Our present system of progressive direct taxation, which taxes income much more heavily at the margin than in the aggregate, can hardly avoid exercising a discouraging effect on the willingness to undertake extra work, though it is open to argument whether to tax away a large part of the extra earnings of extra work is more discouraging than a strict system of rationing, which prevents a man spending his extra earnings on what he wants. Perhaps something might be done to reduce the disincentive effect of direct taxation by a modification of our present system of P.A.Y.E., but a more hopeful line of approach is through indirect taxation. Where, as is frequently the case, the supply of non-essential goods is inadequate to meet the demand at the existing level of prices, the whole of the existing supply would find buyers even if prices were higher. But it would be undesirable to allow the extra price to be passed on to the producers, for this would encourage them to expand the output of non-essentials. If, however, the extra price were taken by the Government by way of purchase tax, demand would be equated with supply, and the Government would be provided with funds to meet its programme of capital construction. For instance, the fact that a new car can be resold at a price well above its original cost shows that all the available supply of new cars could be sold even if purchase tax on them were considerably heavier. It seems likely that the effect on incentive of heavy indirect taxation is much less than that of heavy progressive direct taxation—a man won't work overtime if half the extra he earns is taken from him in income tax, but he will work to earn money to buy tobacco although three-quarters of what he pays for it goes to the Government.

It seems possible that indirect taxation could also be used directly to influence the distribution of resources into channels the Government considers desirable. If high enough purchase taxes were imposed on the products of industries which are thought to be using more than their due share of resources, the resultant rise in selling prices would ultimately check the demand for the product and compel producers to reduce output, thus releasing factors of production for more urgent work. There may be some cases where there are technical difficulties in taxing the product, especially in certain service industries. For such industries the suggestion is made that it might prove easier to tax, not the product, but the resources employed. Thus a firm might be required to pay to the Treasury a certain proportion of its wage bill. This would be a very difficult tax to evade, and since its main object would not be the raising of revenue but the release of resources for more urgent work, the levying of the tax upon the amount paid for the scarce resources employed would be particularly appropriate. Such a form of taxation might be suitable for the football pools and the betting industry.

To sum up, we have four possible ways in which the present situation may develop—open inflation, increased controls, monetary deflation plus higher interest rates, and a reduction in Government expenditure coupled with increased or maintained indirect taxation, leading to a budget surplus. In the recent budget there is some indication that the Government is beginning to move in the direction of the last of these courses. Whether it will move fast enough or far enough remains to be seen.

APPENDIX

	Bank of England			Nine Clearing Banks							National Money Income		Bank Deposits as % of National Income		Interest Rate	
	Gold	Note Circulation £Mn	Bankers' Deposits £Mn	Cash £Mn	Cash % of Deposits	Discounts £Mn	T.D.R.s. £Mn	Advances £Mn	Investments £Mn	Deposits £Mn	Bowley £Mn	White Paper £Mn	Bowley	White Paper	*Short* (3 months Bank Bills) (% p.a.)	*Long* (London & Cambridge Index of yield on Fixed Interest Securities) (1924=100)
Monthly Averages																
1932 March ..	121	357	73	170	10·4	215		888	266	1639					2·6	97
April ..	121	356	72	171	10·4	238		866	272	1643					2·4	96
May ..	123	357	76	176	10·6	245		858	284	1661					1·6	92
June ..	134	358	84	188	10·9	276		838	324	1727					1·1	92
July ..	137	367	85	187	10·6	316		822	333	1765					1·0	83
August ..	139	368	84	188	10·4	373		803	348	1813					0·7	84
September..	139	361	86	190	10·4	390		789	367	1826					0·7	83
October ..	139	360	80	189	10·2	389		782	396	1853					0·8	79
November..	139	360	86	190	10·2	389		772	409	1859					0·8	82
December	130	370	98	202	10·4	406		761	455	1944					0·9	82
1933 January ..	121	357	114	210	10·8	429		752	455	1943					0·9	82
February ..	132	356	93	205	10·7	384		753	480	1917					0·9	81
March ..	164	363	100	203	10·8	346		754	492	1886					0·7	82
Yearly Averages																
1931 ..	142	354	65	179	10·4	254		904	285	1723	3450		50		3·5	107
1932 ..	130	360	81	184	10·5	307		830	332	1752	3325		54		1·9	90
1933 ..	176	371	102	208	10·9	352		746	519	1914	3550		54		0·7	81
1934 ..	191	378	102	208	11·3	288		740	543	1842	3700		50		0·8	76
1935 ..	194	394	98	212	10·8	264		755	598	1961	3925		50		0·6	74
1936 ..	227	432	96	217	10·3	312		825	598	2104	4150		49		0·6	73
1937 ..	320	479	97	224	10·3	276		910	607	2172	4350		50		0·6	78
1938 ..	141	485	104	229	10·6	274		930	593	2161	4350	4671	50	46	0·6	79
1939 ..	—	507	103	232	10·9	246		943	564	2129		5037		42	1·2	86
1940 ..	—	574	107	254	10·7	357		906	621	2377		5980		40	1·0	82
1941 ..	—	652	118	293	10·4	220	474	815	837	2818		6941		41	1·0	77
1942 ..	—	807	131	326	10·5	223	614	758	1006	3104		7664		41	1·0	74
1943 ..	—	966	148	365	10·5	173	961	711	1072	3484		8171		43	1·0	75
1944 ..	—	1135	176	415	10·5	164	1338	715	1082	3953		8366		47	1·0	75
1945 ..	—	1284	207	468	10·5	181	1747	753	1072	4461		8340		53	0·9	74
1946 ..	—	1358	242	499	10·3	443	1436	847	1251	4846		7974		61	0·5	72

Economic Progress in a Stable Environment

By A. C. PIGOU

I

IN actual life the process of economic change is dominated by technical developments resulting from scientific discoveries and is closely associated with changes in the size of the population of working age. In what follows I shall rule both these things out of account. I shall assume, moreover, that the stock of money circulating outside the banks is fixed and that the Government does not attempt to control investment with a view to regulating employment. Finally, I shall assume that the State nowhere intervenes by fixing maximum prices below, or minimum prices above, those which would rule in a free market. This implies that at the ruling prices there are no unsatisfied demands or unwanted supplies; in other words that markets are everywhere cleared, or, if we will, that all parts of the economic system are always in market equilibrium—to be sharply distinguished from what I shall call in a moment thorough-going equilibrium.

The theme I propose is this. Let us imagine ourselves situated in an initial year in which some investment is taking place, and let us ask what thereafter, subject to the conditions set out in the last paragraph, will happen. The enquiry is most conveniently conducted in two divisions; first on the assumption that people make net savings —I use this term as equivalent to net investment—solely on account of the material returns which they expect them presently to yield, so that, if these expected returns were nil, there would be no net saving; and, secondly, on the more realistic assumption that saving is partly motivated by a desire to hold capital wealth as such as a source of prestige, individual security and so on. On the first assumption the analysis is straightforward, but on the second some awkward puzzles may—not must—present themselves.

II

In Frank Ramsey's well known article, "A mathematical theory of saving,"[1] the first of these two assumptions is implicitly adopted. On this basis Ramsey observes that, for the economic system in any closed community to be in thorough-going equilibrium, the rate of return obtainable from the marginal unit of capital must be equal to the representative man's rate of time preference. So long as there

[1] *Economic Journal*, Dec. 1928.

is any difference between these two things, that will constitute a continuing stimulus towards net investment or towards net disinvestment ; so that the state of the economic system is continually changing. When there is net investment or disinvestment there cannot be thorough-going equilibrium ; when there is thorough-going equilibrium there cannot be net investment or net disinvestment. Here we are supposing that in our initial year some net investment is taking place, so that we have to do with a forward, not a backward, movement. What are the characteristics of this movement ?

There is one preliminary complication to be cleared out of the way. We may properly, for the present purpose, disregard cyclical fluctuations in the proportion of available work-people actually employed, but we must not exclude the possibility of a trend of change in this proportion. The monetary authorities being assumed to hold the stock of money circulating outside the banks constant, if the income velocity of money varies, its variations cannot be offset by compensating variations in this stock. As we shall see in a moment, the gradual expansion in the stock of capital will entail a gradual fall in the rate of interest in terms of consumption goods. This may be expected to entail a gradual fall in the income velocity of money and, therefore, in money income, or effective demand. Other things being equal, this should set up a downward pressure on money wage rates, which, so far as it is resisted, will promote unemployment. The pressure will diminish as the rate at which the rate of interest is falling decreases. Hence the proportion of productive resources out of employment might be expected to become smaller and the proportion actually employed larger as the years pass. This movement can, however, hardly be other than slow and weak ; and in any case, so far as it is realised, should reinforce rather than counteract the broad tendencies I am about to describe. We need not, therefore, trouble ourselves about it. What then are these broad tendencies ?

First, under the pressure of the excess of the rate of interest in terms of consumption goods over the representative man's rate of time preference, new investment will be continuously taking place, the stock of capital in existence will continuously grow, and, therefore, in the conditions we are supposing, the stock of capital actually at work will continuously grow.

Secondly, with the stock of capital at work increasing and the stock of labour (as we are supposing) constant, the rate of return to investment, and so the rate of interest in terms of consumption goods—a slightly ambiguous concept—will, in the absence of technical change, become continuously smaller.

Thirdly, there will be a reaction on the size of real income. Since we are supposing the population of working age to be constant, the aggregate stock of resources, capital *plus* labour, available for work must be continuously increasing. Granted that the percentage of employment is not decreasing, real output or income is bound continuously to expand unless the effective length of the working day is being contemporaneously cut down fast enough to offset this tendency.

By the effective length of the working day, whether for labour or for capital, is meant the proportion of the twenty-four hours in which work of standard efficiency is being done; so that a twelve hours' actual day is not 50 per cent. longer than, but of the same length as, an eight hours' day if work in the shorter day is 50 per cent. more efficient. It should be noted that for capital the effective length of the working day is not necessarily the same as it is for labour; since it is possible to operate the same equipment with one, two or three shifts of labour per day; and, the shorter the working day for labour is, the more inducement employers have to introduce multiple shifts. So far as they succeed in doing this, reductions in the effective length of the working day for labour will be associated with expansions for capital. That, however, is a secondary matter and we may ignore it. What may be expected to happen to the effective length of the working day for labour?

The more capital there is the greater is the capacity of the community to produce real income; and people may be expected to take out some part of their more favourable conjuncture in extra leisure. This is not, indeed, *necessary*. The effort-cost of producing a given quantity of consumers' goods having diminished, people *might* decide, in consequence, to increase the amount of their effort. In fact, however, the progressive growth of capital, which has taken place in modern times, has been accompanied by a downward trend in the hours of labour. Moreover, it is well known that wealthier countries on the whole enjoy shorter working hours than poorer countries. These considerations suggest, though, of course, they do not prove, that enlargements in the stock of capital are likely, as a rule, to entail contractions in the effective length of the working day for labour.

Now the size of a community's real income or output depends, in given conditions of technique and so on, on the size of the stocks of capital and labour in existence, the proportions of these stocks actually engaged in work and the effective length of the working day. We have seen that, as the years pass, the stock of capital will be increasing while, we are supposing, the stock of labour and the proportions of both stocks actually at work, will at worst be constant. These conditions in combination make for an increase in real income. True, a third factor, the accompanying decrease in the effective length of the working day, will cause real income to increase less fast than it would do otherwise. But, except in a practically impossible limiting case, it cannot cancel the *whole* of the increase that would have occurred apart from it. Hence real income must continuously grow.

Thus as the years pass, with the population of working age constant and no alteration in technique, three major developments must take place; a continuing increase in the stock of capital both in existence and actually at work; a continuing fall in the rate of interest in terms of consumption goods; and a continuing increase in real income. There remains the question what will happen to the volume of annual investment. Since the economic system is moving towards a goal at which, if it is ultimately attained, this will be nothing, it must at *some* stage enter upon a decreasing phase. It need not, indeed, enter upon that phase immediately or even soon after our initial year is left behind. For, while the fall in the rate of interest, taken by itself, tends to make the rate of investment fall, the associated increase in real income, taken by itself, tends to make it grow. Still, eventually, whether before, in or after our initial year, it is bound to start downwards on a final movement towards nothing.

The general nature of the process—if we like to be pompous, the 'dynamic process'—that I have been describing is plain enough. What of the goal towards which it is moving? We cannot suppose that the representative man's rate of time preference is ever negative, no matter how large an income he has. Hence there can be no question of the rate of interest in terms of consumption goods falling to zero, in consequence of the expansion in the stock of capital, *before* it has come to equality with this rate of time preference. It does not strictly follow from this that there must be some stock of capital in respect of which the rate of interest and the rate of time preference would have equal positive values. For conceivably the two rates, one or both of them always falling, might approach each other asymptotically without actually coinciding in respect of any finite stock of capital. We may, however, I think, disregard this possibility—it is a mathematical toy—and conceive that there *is* a goal with a finite stock of capital, a nil rate of investment and a positive rate of interest, in terms of consumption goods, such that, *if* the economic system hit it, in the absence of technical or population change it would stay there in the thorough-going equilibrium of a stationary state. Indeed there *may* (not, of course, must) be several alternative goals—positions of thorough-going equilibrium—at which the economic system would come to rest if it once got there. But this is a trivial point; because, since we suppose ourselves to start with a state of things in which some investment is taking place, the first point of intersection between the rate of interest curve and the rate of time preference curve (in respect of stationary states) at which the system arrives must be a stable one, and, even though other points of stable equilibrium also exist, there are no means, in the conditions we are supposing, by which the economic system can get to them. Thus for practical purposes there is only one goal in which we need interest ourselves.

The question still remains whether the economic system need ever hit that goal; whether it might not, after coming close to it, overshoot the mark and thereafter, with alternating investment and disinvestment, oscillate about it for ever. We need not, I think, trouble ourselves unduly about this suggestion. For, as the goal is approached, the force impelling to movement, in this case the gap between the rate of interest and the rate of time preference, becomes progressively weaker and advances are made by smaller and smaller steps—a quite different state of affairs from that illustrated by the celebrated pig cycle. As the first hero struggles panting up the final slope of Mount Everest, it is exceedingly unlikely that he will overshoot his mark and thereafter step backwards and forwards across it for ever. He will sit down; and, for so long as he dare, stay sat down. This, too, then is a toy. On the assumption we have so far been making the economic system will eventually reach and stay at what we may call, if we like, the Ramseyan thorough-going equilibrium—the classical stationary state.

III

So far we have built our analysis on the first of the two assumptions distinguished above, namely that people save merely for the sake of the material return that they expect presently to receive—for the sake, that is to say, of the rate of interest in terms of consumption goods—so that, if this rate were nil, there would be no net saving. We now turn to the other and more realistic assumption. People are led to save in part by a desire actually to hold wealth for the amenity, so to speak, derived from holding it; the representative man with an income not too small would almost certainly save something—be ready to supply some resources for investment—even if the rate of interest were nil. This greatly complicates our problem. For now a thorough-going equilibrium requires, not that the rate of interest in terms of consumption goods shall be equal to the rate of time preference, but that it shall be less than the rate of time preference by some quantity that represents the rate of amenity return from marginal saving. The rate at which *borrowings and lendings* take place is, indeed, the rate of interest alone without any amenity allowance. The reason is that, when a man borrows resources from another man, no addition is made to his net capital assets, because what he receives is exactly offset by the capital debt created against it. In like manner, when a man lends to another man, no deduction is made from his net capital assets. Therefore what he borrows carries no increment of amenity, and no such element enters into what he pays for loans. But the rate of interest plus the amenity allowance is what the representative man, who in the last resort is both demander and supplier, balances in his mind against the burden he suffers in withdrawing from consumption and supplying (to himself) for investment the marginal apple so supplied. This fact opens up a possibility excluded on our previous assumption, namely that the rate of interest in terms of consumption goods may fall to nothing *before* the stock of capital has become large enough for this rate of interest plus this amenity value to have come to equality with the rate of time preference. This possibility need not, of course, be realised. It may quite well happen that the rate of interest plus our amenity value comes to equality with the rate of time preference while the rate of interest is still positive. In that case everything happens just as it would do in the conditions described in the last section. But it is no longer *necessary* for thorough-going equilibrium to be attained with a stock of capital in respect of which the rate of interest in terms of consumption goods is still positive. If thorough-going equilibrium is *not* attained while that is still so, while the earlier stages of the movement forward from our initial year are as we found them to be on our first assumption, presently a critical point is reached, and we are confronted with a new kind of situation.

The essential fact is this. Since money can be held without appreciable cost it is impossible for the money rate of interest to be less than nothing. Further, since in a thorough-going equilibrium there can be no expectation of a change in relative values, all commodity rates of interest must be the same as the money rate. It follows that no sort of rate of interest can be less than nothing. Hence, in the conditions we are supposing, it may be impossible for the economic system to attain its goal—an equilibrium in which the rate of interest in terms of consumption goods plus the amenity value of marginal saving is equal to, that is to say, is as small as, the rate of time preference. What then will happen ?

This is where Lord Keynes comes on the scene. His argument is broadly this. People still want to save. This follows from the fact that the rate of interest plus the amenity value of marginal saving is greater than the rate of time preference. But they will not save by making new real investment at negative interest because it is open to them to hold money at nil interest. Consequently, the representative man will progressively draw money out of the circulation into savings deposits, so that, in the absence of new creations of money, money income must progressively fall or—another way of saying the same thing—money income must fall through the income velocity of money being reduced. Now in these circumstances, if the rate of money wages is held rigid in spite of growing unemployment, unemployment must grow ; the proportion of available resources at work contracting roughly in proportion to the contraction in money income. But this process will not go on for ever. The representative man's rate of time preference is sure to be substantially larger for small real incomes than for large, because with a smaller real income he is under stronger pressure to focus attention on the present moment. The contraction of employment entailing, as it does, a corresponding contraction of real income, carries with it, therefore, an increase in this rate. Presently the rate rises so far that it reaches equality with the rate of interest plus the money measure of the amenity value of marginal savings proper to the stock of capital that has been attained. At this point the economic system comes into equilibrium. People no longer desire to save anything, and, therefore, money income no longer contracts. The stock of capital is the same as it was when the rate of interest became nothing; but employment, and therewith real income, is smaller—maybe much smaller. The situation thus reached, provided that money wage rates are still maintained, is one of stable equilibrium—the low level equilibrium that I have sometimes called Lord Keynes's Day of Judgment. Whether real income then is lower, not merely than it was at the critical moment when the rate of time preference became nothing, but than it was in our initial year, depends, of course, on how far distant from that critical moment our initial year was.

This solution is clearly valid provided that the money wage rate is in fact rigidly maintained in the face of heavy and growing unemployment. It is, however, very hard to believe that, in given conditions of technique and so on, the proportion of available resources at work will be determined permanently, as this solution requires, by such superficial things as the money and price situation. In the Keynesian equilibrium wage earners, having infinite time at their disposal, are surely bound to see through the money façade to the realities behind. There must, it would seem, be *some* proportion of employment, not necessarily, of course, "full" employment, to the attainment of which they would set themselves irrespective of the monetary situation. If this is in fact so, the position proper to Lord Keynes's Day of Judgment will not be attained or even approached. Money wage rates will continually fall to prevent employment from falling; but the income velocity of money and money income will also continuously fall. Thus money wage rates, money income and money prices will all move downwards for ever, while employment and real income remain fairly stable and fairly good. With money wage rates free to vary to any extent, this and not the Keynesian Day of Judgment appears *prima facie* to be the goal of the economic process.

But this appearance is deceptive. As the money rate of wages falls the money price of consumption goods falls also. This entails that the value in terms of consumption goods of the stock of money, and, along with this, that of other sorts of non-instrumental property, such as Old Masters, which are specially attractive as receptacles for, or embodiments of, savings, expands. This means that the total stock of property, as valued in consumption goods, which is held by the public becomes progressively larger and larger. It must be remembered, indeed, that not all the stock of money held by the public constitutes a net asset to them. Part of it is offset by debts from them to the banks in respect of advances and discounts. In 1938, the last full pre-war year, these amounted to 1,200 millions as against 2,160 millions of deposits; while the note circulation was 485 millions. Thus of the public's aggregate money holdings, notes and deposits together, only some 1,400 millions out of a total of 2,600 millions constituted a net element in their holding of property. Hence the addition made to this holding of property as valued in consumption goods when prices fall is smaller than it might perhaps be thought to be at first sight. None the less, it is likely to be substantial. Now the amenity value in terms of satisfaction derived from holding an additional unit of property evidently becomes smaller the more units of property (as measured in consumption goods) that there are ; while, with a given real income, the value of a unit of satisfaction in terms of consumption goods is, of course, given. Hence, with employment the same as it was when the rate of interest first became nothing, the marginal amenity yield of savings expressed in consumption goods must become smaller and smaller as money income contracts, until finally, it plus the rate of interest coincides with the rate of time preference and a genuine equilibrium is established. Henceforward the stock of capital, employment and real income remain for ever what they were at the critical moment when the rate of interest first became nothing. That rate itself continues for ever at nothing ; the rate of time preference continues for ever at that level above nothing at which it stood then ; and the marginal amenity yield of (nil) new savings is for ever equal to the excess of the rate of time preference above nothing. Real income, being the same as it was at the critical moment, is obviously larger than it was in our initial year.

To sum up then. If, as the years pass and capital accumulates, the rate of interest in terms of consumption goods plus the marginal amenity yield of savings becomes equal to the representative man's rate of time preference before the rate of interest falls to nothing, thorough-going equilibrium will be then and there established and there are no complications. But, if, before this equality can be achieved, the rate of interest has fallen to nothing, the upshot is uncertain. If money wage rates are rigidly maintained, at this point the economic engine will be put into reverse until a new low level equilibrium is established with a lower, perhaps a much lower, level of employment and real income. If, on the other hand, money wage rates move downward freely, equilibrium will ultimately be established with the stock of capital, employment, real income, the rate of interest and the rate of time preference standing as they stood when the rate of interest first reached nil level, but with the marginal amenity yield of nil new savings so far contracted that this plus the rate of interest is no longer greater than, but is equal to, the rate of time preference.

IV

The foregoing analysis holds good, of course, only on the basis of the assumptions set out at the beginning of this article. It is extremely improbable that these assumptions will ever be satisfied in practice.

For, even if we allow the population of working age to be stable and the faculty of invention to disappear, it is ridiculous to suppose that the public authorities would stand passive in the case of catastrophic disturbances. If a situation arose in which money income was being driven inexorably downwards in the way contemplated in the last section, no government would allow money wage rates to rush downwards very far; legal minimum rates would inevitably be established. This would very likely be done soon enough to prevent the type of final equilibrium described on page 187 from emerging. But, equally, no government could allow the movement towards the Keynesian equilibrium, with its massive unemployment, to proceed very far. It would be bound to intervene by itself undertaking on behalf of the community investment at negative rates of interest or by adopting some other means to arrest the downrush of money income. Thus the puzzles we have been considering in the last section are academic exercises, of some slight use perhaps for clarifying thought, but with very little chance of ever being posed on the chequer board of actual life.

The Origin of the Monopoly of Broadcasting in Great Britain[1]

By R. H. Coase

1. THE GENESIS OF BROADCASTING IN GREAT BRITAIN

SUCCESS in the transmission of speech and music by radio did not immediately lead to proposals for the establishment of a broadcasting service.[2] At first the transmission of sound by radio was regarded simply as a new means for sending messages and as its original name, wireless telephony, indicates, was considered to be a new kind of telephone. This point of view is well illustrated by the following quotation from what appears to be the first book published in Great Britain which was wholly devoted to wireless telephony. "The possible fields in which wireless telephony may be utilised are many and diverse, but those in which its commercial application is probable are relatively few. One reason at least for this statement is to be found in the competition of the old established wire telephone, and in the much greater secrecy of wire communication over wireless. As a well-known writer has recently aptly put it: 'A wireless telephone talk is a talk upon the house-tops with the whole world for an audience.' The practical utilisation of wireless telephone methods is therefore confined almost entirely to cases where the wire telephone cannot be used, or is rendered unreliable from exterior causes. Wireless telephony's most important field is consequently for long distance, and especially trans-ocean work, and for communication with ships."[3] And this writer goes on to instance as especially important uses, amongst others, communication with moving railway trains and with aircraft.[4] But there were some who thought of other uses for wireless telephony. Mr. A. C. C. Swinton had drawn attention in November, 1918, to the possible distribution of news by this means. But what he had in mind was a service similar to that of the tape machine. He pointed out that it would be possible to receive and print news messages transmitted by special distributing stations. He also mentioned the possibility "in the near future" of a public speaker addressing "an audience of thousands scattered, maybe, over half the globe". But there is no suggestion here of a broadcasting service. And the report of Mr. Swinton's talk in the *Wireless World* goes on to say: "But by far the most fascinating and important problem spoken of was that of wireless distribution of electrical energy in bulk."[1]

---

[1] It is a pleasure to record the helpfulness with which all my requests for information have been met. I am especially indebted to Sir Frank Gill, Mr. Tom Clarke and Mr. E. S. Byng. Information was also very kindly given to me by the Marconi Company and by the *Daily Mail*. But my greatest debt is to the British Broadcasting Corporation which gave me access to their archives and to their collection of press cuttings; and to the Post Office which allowed me to consult the unpublished Minutes of Evidence of the Sykes Committee of 1923. The officials of both the British Broadcasting Corporation and the Post Office gave me the greatest assistance. But it is essential to make clear that I alone am responsible for the accuracy of the facts as I have stated them in this article, and for the opinions which I have expressed. There are two other debts that I must acknowledge. The first is to Miss L. Levy whose efficient work as research assistant made this study possible. The second is to the Economics Research Division of the London School of Economics which financed the research on which this article is based.

[2] For an historical account of the inventions which led to broadcasting, see H. M. Dowsett, *Wireless Telegraphy and Broadcasting*, 1923, Vol. I, pp. 1–53.

[3] P. R. Coursey, *Telephony Without Wires*, 1919, p. 356.

[4] *Op. cit.*, p. 357.

The idea of a broadcasting service must have occurred to some workers in this field. We know that David Sarnoff, then of the American Marconi Company, in a memorandum to the Managing Director written at a much earlier date (about November, 1916), envisaged the possibility of a broadcasting service,[2] and doubtless the same idea had occurred to others. But in general, even among the experts in the field, there seems to have been little, if any, awareness of the potentialities of the discovery of wireless telephony for use in transmitting news, talks, discussions, commentaries, plays and concerts to people in their own homes.[3]

The first major experiment in wireless telephony in Great Britain which had the character of broadcasting was that made by the Marconi Company early in 1920.[4] A new transmitting station of 15 kilowatts was built at Chelmsford, and from February 23rd to March 6th, there were two daily transmissions of speech and music.[5] The object was experimental—to obtain reports on the quality of reception from different places and with different types of receiving sets.[6] Although these transmissions had the character of broadcasting, the primary purpose was not to entertain or instruct the listeners.[7] The next event, and one which attracted considerable attention, was the broadcast by Dame Nellie Melba on June 15th, 1920. This was sponsored by the *Daily Mail* and the broadcast was made from the Chelmsford station of the Marconi Company.[8] During the summer of 1920 some additional transmissions were made. One experiment which was made in co-operation with the Press Association was a test of the efficiency of wireless telephony in the sending of news to newspaper offices.[1] But after the summer of 1920, wireless telephony broadcasts cease.[2]

---

[1] For the section of Mr. Swinton's address dealing with wireless telephony, see the *Journal of the Royal Society of Arts*, November 22nd, 1918, pp. 14–15. A report of this talk (and the comment given in the text) appeared in the *Wireless World* for April, 1919, p. 32.

[2] See G. L. Archer, *History of Radio to 1926*, pp. 112–113, where Mr. Sarnoff's memorandum, which foreshadowed the main features of a modern broadcasting service, is reproduced.

[3] See, for example, W. T. Ditcham, "The Progress of Wireless Telephony", *Yearbook of Wireless Telegraphy and Telephony*, 1920, p. 922.

[4] The earlier experiments were concerned with transmissions which were directed to particular places. The intention was not to broadcast.

[5] See A. R. Burrows, *The Story of Broadcasting*, pp. 47–48.

[6] See Frank P. Swann, "A High Power Wireless Telephony Installation", *Wireless World*, May 1st, 1920, p. 79; and P. P. Eckersley, *The Power Behind the Microphone*, p. 37.

[7] Compare P. P. Eckersley, *op. cit.*, p. 38. "The idea of broadcasting was thus generated as a result of an experiment designed for quite another purpose."

[8] For an account of how this broadcast came to be given, see Tom Clarke, *My Northcliffe Diary*, pp. 150–151. For an account of the broadcast itself, see the *Daily Mail*, June 16th, 1920.

Why did these experimental broadcasts stop ? The reason appears to have been that the Post Office disapproved of them and refused to licence further broadcasts. According to Mr. P. P. Eckersley, the Post Office wrote to the Marconi Company " and said that the experimental broadcasting transmissions must cease because they were interfering with important communications . . ."[3] There is no official statement which is explicit about this matter. But in reply to a parliamentary question about experiments in the distribution of news by wireless telephony, after what appears to be a reference to the experiments carried out in collaboration with the Press Association, the Postmaster General, Mr. Illingworth, added, " It was also found that the experiments caused considerable interference with other stations, and for the present the trials have been suspended ".[4] This is presumably a reference to the Post Office's communication to the Marconi Company.

But broadcasting did not altogether cease in Great Britain. There was still the work of the amateurs. " In London district there had been few evenings in the week since 1920 without entertainment of some kind—all this, however, on low power and in so far as it was broadcasting, technically against the law."[5] And Mr. A. R. Burrows remarks, " the number of tests requiring the assistance of gramophone records seemed somehow to increase week by week ".[6] By the end of 1921, " it was possible any evening in all parts of Great Britain to listen in to well-known amateur stations at work ". These included " frequent programmes of speech and music ".[7] In addition, broadcast concerts from the Hague, which had started in May, 1920, and which continued throughout this period, were heard by the amateurs in Great Britain. And towards the end of 1921, concerts were broadcast from the Eiffel Tower which could also be heard in Britain.[8]

---

[1] See *The Times*, July 20th, 1920, and the *Wireless World*, August 7th, 1920, p. 396.

[2] The latest experimental telephony broadcasts by the Chelmsford station to which I have been able to find a reference are those on August 28th, 29th and 30th, 1920. See the *Wireless World*, October 2nd, 1920, p. 490.

[3] P. P. Eckersley, *op. cit.*, p. 38. Compare also B. L. Jacot and D. M. B. Collier, *Marconi—Master of Space*, where it is said, after a reference to the Melba concert, that the Postmaster-General " sent a protest, deploring that a national service such as wireless telegraphy should be put to such a frivolous purpose " (p. 123). In the *Wireless World*, October 16th, 1920, p. 518, there is a reference to " Chelmsford's inability to transmit speech ".

[4] See Parliamentary Debates, House of Commons, November 23rd, 1920.

[5] " History of the Wireless Society of London ", *Wireless World*, November 25th, 1922, p. 257.

[6] See A. R. Burrows, *op. cit.*, p. 57.

[7] See H. M. Dowsett, *op. cit.*, Volume II, p. 171.

[8] As an indication of the scale of the activities of the amateurs at this time, it should be pointed out that there were at the beginning of 1921 150 amateur transmitting licences and over 4,000 receiving licences. These figures were given by Captain Loring, the Post Office representative, at the second conference of wireless societies, March, 1921.

At the second conference of wireless societies called by the Wireless Society of London on March 1st, 1921,[1] one item on the agenda was "The possibility of regular telephone transmission from a high power station to include all matters of interest to amateurs and to be on different definite wavelengths for calibration purposes". Mr. E. Blake, who appears to have been the Marconi Company representative at the conference, said that the Marconi Company had applied to the Post Office for a temporary licence to carry out "a somewhat humbler programme for amateurs than was suggested on the agenda". The Marconi Company's application had not been refused but "the Post Office required some very good evidence that such a programme would really be welcomed by amateurs and had suggested that the views of the Institution of Electrical Engineers or of the Committee of the Wireless Society of London should be obtained. . . . The intention of the Marconi Company was to transmit for a mere half hour or so once a week". Mr. Blake said the Marconi Company did not feel justified in asking for more than that and explained that it was proposed that the transmissions should consist of both telegraphy and telephony. This proposal received general support, although the President of the Wireless Society of London (Major J. Erskine Murray) remarked that "C.W. (Continuous Wave) and the rest of the programme is very much more important than telephony, although the latter, perhaps, is more amusing".

The attitude of the Post Office was made clear by Captain F. G. Loring, the Post Office representative at the conference. He said: "As to the possibility of regular telephone transmissions, that will be favourably considered by the Post Office when it is put forward, but we do not like it coming from the Marconi Company, as it puts us in rather an awkward position. It would come very much better from the Wireless Society. The Marconi Company's representative will, I am sure, understand what I mean. The application will be much easier for us to deal with if it comes from an organisation like the Wireless Society than from a firm. We cannot give the Marconi Company preferential treatment over any other firm, so that if they asked for permission to send out for half an hour every week, half a dozen other companies could come along, and we should have to give them similar permission, whereas if the Wireless Society were to apply it would make it much easier for us. The question of wavelengths is a very difficult one because at the present time it is not easy to find wavelengths which do not interfere with genuine work".[2]

Following this conference, fruitless negotiations continued for nine months between the Wireless Society of London and the Post Office.[3] It needs to be emphasised that these negotiations were not concerned with the establishment of a broadcasting service. The licences granted to the amateurs (both for transmitting and receiving) were for experimental purposes. And the reason for setting up the proposed broadcasting station was to aid in their experimental work —although the motives of some, at least, of the amateurs were no doubt mixed. The Post Office agreed in August, 1921, to the transmission by the Marconi Company of signals by wireless telegraphy for amateurs but permission for wireless telephony was withheld.[1] While these negotiations were proceeding, amateurs (particularly those belonging to the provincial societies) became restive and letters began to appear in the *Wireless World* from September, 1921, onwards urging that telephony transmissions should be started in Britain. There was also at this time an appeal for subscriptions in order that the concerts from the Hague should not be discontinued. And this naturally strengthened the feeling that there ought to be telephony transmissions in Britain.

---

[1] This account of the conference is based on the minutes published in the *Wireless World*, April 16, 1921, pp. 42–52.

[2] See the *Wireless World*, April 16, 1921, p. 51.

[3] See the *Wireless World*, January 21st, 1922, p. 665.

On December 29th, 1921, a petition signed on behalf of 63 wireless societies representing 3,300 members was handed to Post Office officials, asking for wireless telephony transmissions in Great Britain. It included the following passage: " We would point out that it is telephony in which the majority of our members are chiefly interested, this being the most recent achievement in wireless and that in which, for moderate distances at all events, improvements such as avoidance of distortion, and the production of really articulate loudspeakers and such like, are most required.

It is therefore primarily to serve the scientific purpose of improving the receiving arrangements that we desire to have telephony included . . ."[2]

When the petition was handed in at the Post Office, the representatives of the wireless societies " voiced a national resentment that public services such as wireless Time and Telephony should be left to our neighbours to provide, and that permission to transmit Weather Reports, news and music by wireless telephony should be refused to Companies competent and willing to do so without interference with the defensive services of the country ".[3]

As a result of the petition, the wireless societies were informed in a letter, dated January 13th, 1922, that the Postmaster General " has now authorised the Marconi's Wireless Telegraph Company to include a programme of 15 minutes telephony (speech and music) in the weekly transmission from their Chelmsford station for the benefit of wireless societies and amateurs ".[4] The first broadcast took place on February 14th, 1922. It was made from a station at Writtle (near Chelmsford) which was operated by the Marconi Scientific

---

[1] See the *Wireless World*, March 4th, 1922, p. 754.

[2] See the *Wireless World*, January 21st, 1922, p. 665.

[3] See the *Wireless World*, January 21st, 1922, p. 649. This comment clearly refers to a service with aims wider than those mentioned in the petition.

[4] See the *Wireless World*, March 4th, 1922, p. 754.

Instrument Company. Mr. P. P. Eckersley was in charge of the broadcasts and their character is well described in his book.[1] The station continued to give its weekly programme until January 9th, 1923. "This was to be the first broadcasting station in Great Britain to do regular and advertised transmissions."[2]

2. Proposals for a Broadcasting Service

The first regular broadcasting station in Great Britain was that set up at Writtle. But its main purpose was to assist amateurs in their experiments; not to provide a broadcasting service. Furthermore, although the Writtle station preceded in point of time the establishment of a broadcasting service, it would probably not be true to say that the ultimate provision of such a service was made more likely or even brought forward to any considerable extent in time by the opening of the Writtle station. The position has been described by Mr. P. P. Eckersley:

"Many declare that if it had not been for Writtle, and the interest that Writtle stimulated, broadcasting would never have come to England.

While I, as a worker at Writtle, and one who was responsible for the artistic and the technical side of the transmission, am much flattered by the suggestion, I am still unconvinced.

Broadcasting came about because those interested came over from the States and pointed out what vast sums of money were being made there, what interest broadcasting was creating, and how England had got left behind. This I think was the great stimulant—American broadcasting. It had nothing to do with the then unhonoured and unsung transmissions, attracting no notice in the ordinary Press, and of which the general public was wholly ignorant. This is not false modesty, it is the truth, and while, of course, the Writtle transmission may have raised to fever pitch the enthusiasm of real wireless amateurs, I think it did little to attract general notice."[3]

A simple study of dates confirms the truth of this analysis. The Writtle transmissions did not start until February 14th, 1922. Yet we know that already by March of that year (before any conclusions could be drawn from the experience of the Writtle broadcasts) a number of radio manufacturers had applied to the Post Office for permission to broadcast.[4] The reason for these applications is quite clear. Experience in the United States had shown that there was a large market for receiving sets once a broadcasting service had been provided.[1] Radio manufacturers were therefore anxious that a broadcasting service should be established in order to create a demand for their receiving sets. On April 3rd, 1922, the Postmaster General announced in the House of Commons that the whole question was being referred to the Imperial Communications Committee in order to obtain the views of the other Departments.[2]

---

[1] P. P. Eckersley, *op. cit.*, pp. 41–43.

[2] P. P. Eckersley, *op. cit.*, p. 40.

[3] P. P. Eckersley, *Captain Eckersley Explains, a reply to his numerous correspondents* (1923), p. 2. None the less, the practical example which the Writtle transmissions furnished may have had some effect in easing the course of the negotiations leading to the establishment of a broadcasting service.

[4] See F. J. Brown, "The Story of Broadcasting in England", *Radio Broadcast*, June, 1925, p. 176, and "Broadcasting in Britain", *London Quarterly Review*, January, 1926; and also Mr. F. J. Brown's evidence to the Sykes Committee, May 2nd, 1923.

The next public move was a statement issued on April 19th, 1922, by Mr. Godfrey Isaacs, Managing Director of the Marconi Company.[3] He said that " They were only waiting for the necessary facilities —and he thought the Government were going to give them ". The Marconi Company's programme was " to supply instruments to the householder on hire ". They planned to set up broadcasting stations in different parts of the country and to transmit on particular wavelengths, " if we get assistance, as I have no doubt we will, from the authorities " so that only those hiring the particular receivers would hear the programmes. Mr. Godfrey Isaacs' reason for preferring the hiring of instruments was that " Modifications would be introduced from time to time in the apparatus, and once a man had bought his property, he would not feel happy if soon after he had to buy something better ". He added that if the public wanted to buy the apparatus they could do so.[4] A noteworthy omission in Mr. Isaacs' statement is that he makes no reference to the repercussions which the Marconi Company plan would have on those of the other companies which desired to start broadcasting or to the problem of how the wavelengths would be allocated between the various companies. It may be that he thought it impolitic to refer publicly to these questions at that stage. Or perhaps he imagined that, in the event, the Marconi Company would be bound to undertake the operation of all the broadcasting stations. This would not have been an unreasonable expectation. The Marconi Company was the only British company with experience in the operation of broadcasting stations and was, in fact, operating the only broadcasting station at work in Great Britain. Furthermore, the Marconi Company claimed to control many master patents in connection with broadcasting.[1]

---

[1] The first regular broadcasting station in the United States was that established by the Westinghouse Electric and Manufacturing Company in Pittsburgh. This station started operating in November, 1920. During World War I, the Westinghouse Company had set up two experimental stations, one at the plant in Pittsburgh and one at the home of Dr. Frank Conrad (an employee of the Company). After World War I, Dr. Conrad continued his experiments. He sent out interesting programmes (largely gramophone records) and his station was considered to be one of the best amateur stations in the United States. An advertisement of a local department store in a Pittsburgh newspaper for radio receivers which could be used to receive the programmes sent out by Dr. Conrad attracted the attention of Mr. H. P. Davis of the Westinghouse Company. It resulted in the decision (made early in 1920) to build a broadcasting station at Pittsburgh; the return for the outlay coming from the sale of receiving sets and the advertisement for the Westinghouse Company. Other stations were opened by the Westinghouse Company late in 1921 and other companies followed suit. See H. P. Davis, " The Early History of Broadcasting in the United States ", in *The Radio Industry, The Story of its Development*, pp. 189–225; and G. L. Archer, *History of Radio to 1926*, pp, 199–242. Visiting Englishmen were greatly impressed by the " broadcasting boom ". Mr. F. J. Brown, in a letter written in February, 1922, from the United States, said of the Westinghouse Company: " They . . . are stated to be selling receiving sets (varying in price from $30 to $150) at a rate of 25,000 a month, and are quite unable to meet the demand. Other people are following suit, and it is likely that there are now between 200,000 and 300,000 receiving sets in use ". See F. J. Brown, " The Story of Broadcasting in England ", *Radio Broadcast*, June, 1925, p. 175. In his evidence to the Sykes Committee on May 2nd, 1923, Mr. F. J. Brown stated: " Before I left ", which was in March, 1922, " the number was said to have increased to 500,000 . . . ". In an article in *The Times* of May 8th, 1922, Sir Henry Norman stated that the number of receiving sets in the United States was believed to be 750,000.

[2] See Parliamentary Debates, House of Commons, April 3rd, 1922.

[3] See *The Times*, April 19th, 1922, p. 12.

[4] I have been informed by the Marconi Company that an important activity at this time of the Marconi Marine Company was the hire and maintenance of wireless apparatus for ships. This arrangement was preferred by shipowners to outright sale and this probably had some influence on Mr. Isaacs' views.

This Marconi Company plan brought a letter of protest in *The Times*.[2] The writer (Mr. H. H. Brown) objected to the " reception of telephony so controlled that the hire or purchase of the instruments of a particular firm was an almost essential preliminary ". And he went on to say : " I suggest that rather than place one firm in a privileged position, they should raise the annual charge for a ' receiving ' licence sufficiently to defray the cost of a ' broadcasting ' station ".

In the meantime, the Wireless Sub-Committee of the Imperial Communications Committee held its first meeting on April 5th, 1922. A further meeting of this Committee was held on April 22nd, 1922.[3] The report of this Committee was not published but its main terms can be gathered from a speech of the Postmaster General, Mr. Kellaway, in the House of Commons on May 4th, in which he stated that he was adopting the recommendations of this Committee, and also from two articles by Sir Henry Norman, Chairman of the Wireless Sub-Committee of the Imperial Communications Committee, in *The Times* for May 8th and May 9th, 1922.

The main recommendations of the Committee appear to have been :

(1) Broadcasting stations should be set up in Great Britain.

(2) The wavelength band of from 350 to 425 metres should be allocated for this purpose.

(3) The country should be divided into the areas around London, Cardiff, Plymouth, Birmingham, Manchester, Newcastle, Glasgow or Edinburgh (but not both) and Aberdeen and one or more broadcasting stations should be allowed in each of these areas.

---

[1] See A. R. Burrows, *op. cit.*, p. 64. Compare also the evidence of Mr. E. H. Shaughnessy (at that time engineer in charge of the Wireless Section of the Engineer-in-Chief's Department, General Post Office) on 14th June, 1923, to the Sykes Committee : " . . . in order to establish a transmitting station for broadcasting ; I think one must necessarily use some of the Marconi Company's patents. Whether these patents are valid or not, they have not been fought in the courts, and I think they must use them ; so that in this country, at any rate, the transmitting stations would be a monopoly of the Marconi Company ". Mr. Shaughnessy went on to point out that it could cease to be a Marconi Company monopoly only if they were prepared to licence others.

[2] See *The Times*, April 25th, 1922.

[3] See Parliamentary Debates, House of Commons, August 4th, 1922.

(4) The power of the stations should be 1½ kilowatts.

(5) Only *bona-fide* British manufacturers of wireless apparatus should be allowed to broadcast. For this they should pay the Post Office an annual fee of £50.

(6) No advertising should be allowed. Mr. Kellaway makes no mention of this in his speech. But Sir Henry Norman says in his article: " Of course every big retail house would like to shout the merits and low prices of its taffetas and tulles, its shirts and shoes. There is no room for this ".[1]

(7) Those possessing receiving sets should pay an annual licence fee of 10s. Sir Henry Norman says that " This is necessary in order to locate apparatus in times of need and so that the user knows the conditions with which to comply ". There is no suggestion that the licence fee should be used to pay the costs of the broadcasting service.

(8) There would have to be regulations regarding the news that the broadcasting stations would be allowed to transmit.

Mr. Kellaway stated in his speech on May 4th: " What I am doing is to ask all those who apply—the various firms who have applied—to come together at the Post Office and co-operate so that an efficient service may be rendered and that there may be no danger of monopoly and that each service may not be interfering with the efficient working of the other ". This corresponds with the statement by Sir Henry Norman that " the commercial firms are to arrange amongst themselves how to share sites, times and wavelengths ". What is clear is that at this time, there was no publicly expressed view that there ought to be a monopoly of transmission in the case of the British broadcasting service. Sir Henry Norman envisaged the possibility of there being ultimately a State broadcasting station. But that was clearly something for the future which did not affect the immediate arrangements. At the beginning of May, 1922, it appeared, at least to those outside official circles, that the broadcasting stations were to be operated independently by various firms manufacturing radio receiving sets.[2] Sir Henry Norman, who must have been very well informed on Government policy, said of the companies, " Each will announce its own service and there will be a natural rivalry to furnish the most attractive programmes, since hearers may conclude that the firm supplying the best entertainment in the clearest manner is the most likely to make good apparatus ".[1]

---

[1] This is in accord with the view of a Post Office official returning from the United States in a statement to *The Times* on April 7th. " Such an important service was not to be drowned by advertising chatter or used for commercial purposes that could be quite well served by other means of communication."

[2] Compare H. de A. Donisthorpe: *Wireless at Home*, which must have been written about this date: " The authorities are now granting licences to various companies so that they may erect wireless telephony stations . . ." (p. 8).

3 The Negotiations

The meeting which the Postmaster General had foreshadowed took place at the General Post Office on May 18th, 1922. The representatives of the 24 firms[2] which had applied for licences to broadcast had been invited to attend. These firms all appear to have been radio manufacturers.[3] The Chairman of the meeting was Sir Evelyn Murray, Secretary of the Post Office. He explained that it would be impossible to grant all the applications which had been made and the firms " were asked to arrive at some co-operative scheme among themselves ".[4] Whatever the impression may have been earlier as to how broadcasting was to be organised in Great Britain, it was made clear at this meeting that the Post Office was in favour of a single broadcasting company.[5]

The larger firms, however, divided themselves into two groups.

---

[1] Mr. F. J. Brown's statement that " The Committee (that is, the Imperial Communications Committee) recommended that an endeavour should be made to induce the various manufacturing firms to co-operate in the establishment of a single Broadcasting Company " in " The Story of Broadcasting in England ", *Radio Broadcast*, June, 1925, p. 176, appears to me to be inconsistent with this view expressed by Sir Henry Norman, who as Chairman of the Wireless Sub-Committee, can be presumed to know what the recommendations were.

[2] Other accounts give the number as 19, 20 or 23 firms. But 24 is the figure given by the Postmaster General. See Parliamentary Debates, House of Commons, August 4th, 1922.

[3] In the *B.B.C. Yearbook* for 1928, in the section entitled " The Press and Broadcasting ", there is a statement that " Before it was determined that broadcasting in Great Britain was to be under unified control ", that is, presumably, before the Autumn of 1922, " some elements in the newspaper industry " thought of establishing broadcasting stations. This is, without question, a reference to the proposal by the *Daily Mail* to set up a *Daily Mail* Marconi Company broadcasting service (probably early in May, 1922). This " came to nothing because of Post Office opposition ". (See Tom Clarke : *My Northcliffe Diary*, p. 874.) Mr. Tom Clarke informs me that the attitude of the Marconi Company was also lukewarm. The account in the *B.B.C. Yearbook* goes on to say that " some of the great stores and other leading advertisers contemplated operating their own wireless services as adjuncts to their publicity ". Although it sounds plausible, I have been unable to find any confirmation of this statement. The same statement had been made earlier by Lord Gainford in an address delivered on the 2nd June, 1927. See the *Annual Report of the Royal Cornwall Polytechnic Society*, 1928. This section of the *B.B.C. Yearbook* also suggests that the newspapers agreed at this time not to operate broadcasting stations : " Having agreed not to exploit broadcasting as against each other, the newspapers formed a united front ". Unfortunately, the records of the Newspaper Proprietors' Association were destroyed in an air raid and it is not possible to make a direct check of this statement. But it is not consistent with the fact that in April, 1923, the *Daily Express* applied to the Postmaster General for a licence to broadcast during the hours not allotted to the B.B.C. (See the *Daily Express* for April 5th, 7th, 14th, 1923.) And Mr. Tom Clarke informs me that he does not know of any such agreement. And he also informs me that had there been any agreement (even of a verbal nature) between the newspapers before the end of 1922, he would surely have been told of it in view of the broadcasting " stunts " which he was organising on behalf of the *Daily Mail*. I think, therefore, that we may take as certain that there was no such agreement between the newspapers in this early period. It seems probable that, apart from the *Daily Mail* application, there was no serious attempt by anyone other than radio manufacturers to start a broadcasting service in the period up to May, 1922. This may have been due to the known opposition of the Post Office to the use of broadcasting for advertising. But the fact that newspapers other than the *Daily Mail* did not attempt to start broadcasting stations cannot be attributed to an agreement between them.

[4] See the evidence of Mr. F. J. Brown to the Sykes Committee, May 2nd, 1923.

[5] See the evidence of Sir William Noble to the Sykes Committee on May 8th, 1923, question 237.

One group comprised the Marconi Company, the General Electric Company and the British Thomson-Houston Company. The other group consisted of the Metropolitan-Vickers Company together with the Western Electric Company[1] and the Radio Communication Company.[2] It must have become apparent at this first meeting that it would prove difficult to bring these two groups to agree on a single scheme. For the official statement issued after the meeting, in spite of the desire of the Post Office for a single scheme, had as its concluding section: "The best means of attaining these objects seemed to lie in co-operation among the firms concerned, and it was suggested that one or possibly two groups should be formed which should become responsible, both financially and otherwise, for the erection and maintenance of the stations and the provision of suitable programmes. In accordance with these suggestions, it was arranged that the representatives of the various firms should collaborate in the immediate preparation of a co-operative scheme, or at the most of two such schemes, for consideration by the Post Office authorities".[3]

On May 23rd, the representatives of the firms met at the Institution of Electrical Engineers, the Chairman of the meeting being Mr. (now Sir Frank) Gill of the International Western Electric Company.[4] At this meeting, a smaller Committee was appointed to draft a scheme. The discussions on this Committee do not seem to have gone very smoothly. But whatever the detailed course of the discussions may have been, the final result was that the two groups failed to come to any agreement for a single broadcasting company and "they reported to those who appointed them that one broadcasting company appeared impossible but that two broadcasting firms would probably be formed which would operate independently".[5] The differences which caused the negotiations to break down "were other than technical differences"[6] and it can therefore be presumed that they concerned the conditions on which the Marconi Company would be willing to furnish its patents to the other companies.[7] The Postmaster General was informed of this failure to reach an agreement by a deputation—presumably at the meeting on June 16th.[8] The Postmaster General stated at this meeting that he would be willing to licence the two groups of manufacturers but not more—and no doubt he made it clear that he hoped the manufacturers would in the end be able to agree on a single broadcasting company.[1] The scheme for independent working which the Post Office would have been willing to sanction was that in London there would be one station belonging to each group, but that the rest of the country would be divided between them.[2]

---

[1] Now Standard Telephones and Cables Ltd.

[2] B.B.C. Archives. It should be noted that the Metropolitan Vickers Company Ltd. were associated with the American Westinghouse Company, and the Western Electric Company were associated with the American Company of the same name.

[3] See *The Times*, May 19th, 1922.

[4] Not Mr. Godfrey Isaacs, Managing Director of the Marconi Company, as reported in *The Times*, May 24th, 1922.

[5] See paragraph 5 of the statement submitted on behalf of the British Broadcasting Company to the Sykes Committee, May 8th, 1923, by Sir William Noble and Mr. (later Sir Archibald) McKinstry.

[6] Evidence of Mr. A. McKinstry to the Sykes Committee, May 8th, 1923.

[7] Compare A. R. Burrows, *op. cit.*, p. 64: ". . . the delicacy of the situation was not generally understood—quite apart from the desire of the Government and the Post Office that broadcasting should be free from the irregularities so apparent in America, the patent situation required much clearing up, as the Marconi Company claimed to possess many master patents governing wireless telephony".

[8] See Mr. Kellaway's statement, Parliamentary Debates, House of Commons, August 4th, 1922.

Following the meeting with the Postmaster General, a sub-committee was appointed consisting of Mr. (now Sir Archibald) McKinstry (of the Metropolitan Vickers Company) and Mr. Godfrey Isaacs (of the Marconi Company). The task of this sub-committee was to draw up an agreement on matters of common interest such as, for example, the allocation of wave-lengths. "During the protracted discussion of this sub-committee the difficulties of operating two companies became so apparent that negotiations for the formation of one company were carried on between the two members, resulting in their being able to report to their respective groups a basis for the formation of one company, which was ultimately agreed to".[3]

There is no question that the difficulties in formulating these common conditions must have appeared formidable. But there were other factors at work which helped in bringing about the agreement to form a single broadcasting company. First of all, there was the evident desire of the Post Office, a Department with which all firms must have wanted good relations, that there should be a single broadcasting company. Secondly, there seems little question that the Marconi Company was itself in favour of a single company.[4] And no doubt this made it willing to make concessions on the points which had led to the breakdown of the earlier negotiations. Thirdly, it must not be forgotten that the main interest of the manufacturers was not in broadcasting as such. Their aim was to sell receiving sets and they wanted a broadcasting service to be established in order to be able to do this. Consequently, the interest of the groups in preserving their independence in the case of the broadcasting service was not particularly great.

The agreement to form a single broadcasting company was reached on August 11th, 1922.[5] At the end of August, a draft of the Articles of Association was sent to the Post Office.[6] On September 12th, 1922, a meeting was held at the Post Office to discuss the Postmaster General's suggested modifications to the draft Articles of Association.[1] By October, all differences had been resolved and on October 18th, a meeting, at which representatives of about 200 firms were present, was held at the Institution of Electrical Engineers to ratify the draft Articles of Association. At this meeting, the Chairman, Sir William Noble[2] was able to say that there was "complete agreement with the Postmaster General".[3] The British Broadcasting Company was registered on December 15th, 1922. The Licence to broadcast was not, however, issued to the Company until January 18th, 1923.[4] The delay appears to have been due to difficulties in negotiating an agreement with the Press on the question of news broadcasts.[5]

---

[1] Mr. Kellaway said in his speech on August 4th in the House of Commons: "... there may be two; I hope myself, in the interests of broadcasting, there will be only one ..."

[2] Compare *Nature*, August 5th, 1922, p. 197.

[3] See paragraph 9 of the statement submitted on behalf of the British Broadcasting Company to the Sykes Committee, May 8th, 1923, by Sir William Noble and Mr. (later Sir Archibald) McKinstry.

[4] Compare the following statement of Mr. Godfrey Isaacs: "I think the Postmaster General has acted very wisely", *The Broadcaster*, August, 1922, p. 18.

[5] See *The Times*, August 19th, 1922.

[6] See *The Times*, August 24th, 1922.

But the start of broadcasting in Great Britain did not wait for the conclusion of these lengthy negotiations. The delay in setting up a service had caused considerable dissatisfaction and in consequence it was decided to begin broadcasting before all the details of the scheme had been worked out and agreed. The date fixed for the official start was November 14th, 1922. On that day, broadcasting began from the Marconi Company's station at Marconi House, London. On November 15th, it began from the Metropolitan Vickers Company's station at Trafford Park, Manchester. Both these stations had been operating on an experimental basis during the Summer.[6] And the next day, November 16th, broadcasting began in Birmingham from a station operated by the International Western Electric Company for which the General Electric Company had provided space in their works at Witton. This station had been set up in October at Oswaldestre House, London, by the International Western Electric Company for experimental purposes and was later removed to Birmingham when it was decided to start broadcasting.

---

[1] See *The Times*, September 13th, 1922.

[2] Sir William Noble had been Engineer-in-Chief of the Post Office and on retiring had joined the General Electric Company. He had become Chairman of the Committee in the Summer of 1922 when Mr. (now Sir Frank) Gill went to the United States.

[3] See *The Times*, October 19th, 1922. According to Sir William Noble's statement submitted to the Sykes Committee, May 8th, 1923, "about 400 representatives were invited".

[4] The Postmaster General who actually signed the Licence was Mr. Neville Chamberlain, Mr. Kellaway having resigned on October 19th, 1922. Later Mr. Kellaway joined the Board of the Marconi Company. There followed in April, 1923, a curious argument as to which Postmaster General had been responsible for the scheme. Sir W. Joynson Hicks (who had become Postmaster General after Mr. Neville Chamberlain) said in the House of Commons that Mr. Kellaway had made the agreement. Mr. Kellaway thereupon wrote to *The Times* saying that the agreement was made by Mr. Chamberlain three months after he had left the Post Office. Mr. Chamberlain replied in a speech that "this was a transparent quibble. He had only put his name to it and not altered a word". Mr. Kellaway then wrote another letter to *The Times* in which he claimed that "this involved the most startling evasion of responsibility". See *The Times* for April 21st, 23rd, 24th and 26th, 1923.

[5] B.B.C. Archives.

[6] See A. R. Burrows, *op. cit.*, p. 68, and *The Times*, November 14th and 15th, 1922. The dates on which broadcasting started from the various stations are given in Appendix II to the Crawford Committee Report, 1926. (Cmd. 2599.)

4 THE BROADCASTING SCHEME[1]

The broadcasting scheme was built around the British Broadcasting Company. The capital of this company was to be subscribed by British radio manufacturers—and they alone could be members. Each member agreed not to sell any apparatus for listening to broadcasts unless the components were British made and they also agreed to pay the company, according to a scale laid down in the agreement, a royalty on all sets and main components manufactured. Any British radio manufacturer could become a member of the Company by subscribing for at least a £1 share and by entering into the Agreement with the Company. The licence which the Post Office issued for receiving sets required the listener to use a set manufactured by a member of the British Broadcasting Company and 50 per cent. of the licence fee was paid over to the Company. Thus, the funds that the company had at its disposal came from three sources: the subscribed share capital, royalties on sets and components, and 50 per cent. of the licence fee.[2] There is no question that the willingness of manufacturers to subscribe the capital of the broadcasting company and to pay the royalties was dependent on their expectation of obtaining profits from the sale of receiving sets.[3] To make sure that the demand for receiving sets which would follow the institution of the broadcasting service would increase the sales of members of the British Broadcasting Company, it was provided that the listener could only use sets manufactured by members of the Company and these in their turn had to use British components.[1] All members of the Company agreed to pool (without payment) all patents needed for broadcast transmissions.[2]

---

[1] The broadcasting scheme was embodied in (i) the Memorandum and Articles of Association of the British Broadcasting Company, (ii) the Licence granted to the Company by the Postmaster General and (iii) the Agreement made between the Company and its members. For the Licence and Agreement, see *Wireless Broadcasting Licence*, Cmd. 1822, 1923. It was provided in the Licence that the Articles of Association could not be altered without the consent of the Postmaster General; the important clause in the Memorandum could not be altered except in accordance with a clause in the Articles which requires the consent of the Postmaster General; and the Agreement was incorporated as a Schedule to the Licence. In consequence, no substantial change in the arrangements was possible without the agreement of the Postmaster General.

[2] It is not certain at what stage the idea was conceived of using the licence fee (or part of it) to finance the broadcasting service. Mr. F. J. Brown said, in his evidence to the Sykes Committee on May 2nd, 1923, "I do not quite know where the suggestion first came from, the papers do not show definitely . . .". The first reference I have been able to find is in a letter to *The Times* of April 25th, 1922, by Mr. H. H. Brown. The suggestion was also put forward in another letter to *The Times* of June 6th, 1922, by Captain W. H. M. Marshall. It was advocated by Sir D. Newton in the House of Commons on June 16th, 1922. It was clearly under discussion before the decision to form a single broadcasting company was reached. See *Nature*, August 5th, 1922, p. 197. The running costs for the eight broadcasting stations were estimated at £120,000 per annum. The number of receiving sets which would be sold within 12 months was commonly estimated at 200,000. So 50 per cent. of the licence fee of 10s. would yield the Company £50,000, or about 40 per cent. of the running costs. See the evidence of Mr. F. J. Brown to the Sykes Committee on May 2nd, 1923.

[3] See, for example, Mr. (now Sir Archibald) McKinstry in his evidence to the Sykes Committee on May 12th, 1923, question 589: "The position is that the British Broadcasting Company was formed by the manufacturing firms merely to broadcast in the hope that the interest created by broadcasting would make the public buy receiving sets, and they are looking for their profit, not from the British Broadcasting Company, but from the sale of sets."

The scheme was very ingenious; and so too were the arrangements which regulated the relations of the six main companies[3] to the others. The share capital of the Company consisted of 100,000 £1 cumulative ordinary shares, on which the maximum dividend which could be paid was 7½ per cent. per annum. The six firms which had been primarily concerned with initiating the broadcasting scheme each subscribed for 10,000 shares and it was provided that they could not hold, in total, more than 60,006 shares. Any application from another firm had to be granted in full. If the granting of all applications would bring the issued share capital above 100,000 shares, all holdings in excess of 10 shares were to be reduced *pro rata* to make the total of holdings equal to 100,000 shares. The provisions regarding the directors were similarly detailed. The number of directors was to be not less than six or more than nine; six were to be appointed by the six main firms and two could be appointed by members of the Company other than the six main firms; and the directors could also appoint an additional director who would be permanent Chairman of the Company.[4]

The Licence which was granted to the Company ran from November 1st, 1922, to January 1st, 1925, and gave the Company permission to operate eight broadcasting stations. The Company had " to transmit efficiently " from each of these stations on every day (including Sundays) " a programme of broadcast matter to the reasonable satisfaction of the Postmaster General ".[5] The Licence also laid down the hours of broadcasting (which could be any hour on Sunday and between 5 and 11 p.m. on weekdays), the wavelengths (which had to be from 350 to 425 metres), and the power (which was to be fixed by the Postmaster General but was not to exceed 3 kilowatts). The Postmaster General had the right of inspection of any apparatus; and the Company was compelled to transmit, if requested by a Government Department, any " communiqués, weather reports or notices issued as part of any programme or programmes of broadcast matter ". The Postmaster General also had the power to take possession of the stations in an emergency.

[1] The decision that for a period of two years licences should contain a provision that only British apparatus should be used was taken early in July. See *The Times*, July 12th, 1922. But it was also decided that those who constructed their own receiving sets should not be subject to this condition. See Parliamentary Debates, House of Commons, July 27th, 1922. This was incorporated in clause 25 (3) of the Licence. This provision was to have very important consequences not foreseen at that time.

[2] This provision was in the Agreement.

[3] These were: the Marconi Company, the Metropolitan Vickers Company, the Western Electric Company, the General Electric Company, the British Thomson-Houston Company and the Radio Communication Company.

[4] Lord Gainford, a former Postmaster General, was appointed the first Chairman.

[5] The six main firms also gave an undertaking to the Post Office that if the three sources of funds mentioned were not sufficient to cover the expenses of the Company during the two years of the Licence, they would themselves furnish the necessary money. This was not included in the Licence; it was an " honourable understanding ". See the Minutes of Evidence to the Sykes Committee, questions 287–291 and 638–640.

There were in the Licence two important limitations on what the Company might broadcast. The first concerned the transmission of news. It was provided that the Company should not broadcast any news or information in the nature of news "except such as they may obtain from one or more of the following news agencies, viz. :—Reuters Ltd., Press Association Ltd., Central News Ltd., Exchange Telegraph Company Ltd., or from any other news agency approved by the Postmaster General".[1]

The other limitation concerned advertising. The clause in the Licence ran : "The Company shall not without the consent in writing of the Postmaster General receive money or other valuable consideration from any person in respect of the transmission of messages by means of a licensed apparatus, or send messages or music constituting broadcast matter provided or paid for by any person, other than the Company or person actually sending the message. Provided that nothing in this Clause shall be construed as precluding the Company from using for broadcast purposes without payment concerts, theatrical entertainments or other broadcast matter . . . given in public in London or the provinces". The exact legal force of this clause is rather obscure. It is clearly aimed at preventing advertising. But in fact it was not interpreted as prohibiting sponsored programmes ; and there were in fact some sponsored programmes broadcast in 1923, 1924 and 1925.[2] Lord Riddell, who gave evidence to the Sykes Committee on behalf of the Newspaper Proprietors' Association, doubted whether this was legal.[3] But the British Broadcasting Company clearly thought that it was and it is unnecessary here to unravel the legal problem.

So far nothing has been said about the nature of the legal monopoly granted to the British Broadcasting Company. The reason is a simple one—the Company had no legal monopoly and there was nothing to prevent the Postmaster General licensing another broadcasting company. Now this was not the view of the directors of the Company at the time it was formed. They believed that they had been granted an "exclusive licence".[4] The evidence to the Sykes Committee[5] of the Solicitor to the Post Office in which he pointed out that there was no legal monopoly caused some annoyance to the directors of the Company. They explained that when, in the course of the negotiations, they had wanted to include a clause in the Licence which specifically said that they were to have an exclusive licence, the Solicitor to the Post Office had replied that they " were already sufficiently protected ".[1] They also recalled the very great efforts which the Post Office had made to bring about a single broadcasting company and claimed that this gave them a " moral monopoly ".[2] It was made clear that if another broadcasting company was allowed, it would not be able to derive any revenue either from the British Broadcasting Company's share of the licence fee or from the royalties paid by the manufacturers.[3] Furthermore, it was doubtful whether any other company could broadcast at all without the use of patents controlled by members of the British Broadcasting Company ; and there seems little reason to suppose that they would have been willing to allow a competing broadcasting company to use their patents.[4] So whatever the legal position may have been, it must have appeared, when the British Broadcasting Company was formed, that for practical purposes a monopoly had been granted. And so it was to prove.

---

[1] The newsagencies had early been concerned to safeguard their interests following the introduction of broadcasting. See, for example, the statement of Colonel Joseph Reed, Chairman of the Press Association Ltd., *The Times*, May 10th, 1922. Various meetings were held which resulted in this clause being included in the Licence. See Sir William Noble's evidence to the Sykes Committee on May 8th, 1923, question 395.

[2] See Lincoln Gordon, *The Public Corporation in Great Britain*, p. 182. A broadcast sponsored by Harrods is referred to in the evidence to the Sykes Committee, questions 1555 and 1556. And there were a few sponsored broadcasts in 1924 and 1925. See the *Radio Times*, January 9th, 1925.

[3] In his evidence to the Sykes Committee on May 29th, 1923, question 1556.

[4] See paragraph 10 of the statement submitted on behalf of the British Broadcasting Company to the Sykes Committee by Sir William Noble and Mr. (later Sir Archibald) McKinstry.

[5] On May 2nd, 1923.

5. Post Office Policy

It is broadly true to say that the establishment of the broadcasting service in Great Britain as a monopoly was the result of Post Office policy. The attainment of the monopoly was no doubt made easier by the necessity for some agreement as between the radio manufacturers on the question of patents and by the fact that the manufacturers' main interest was not in the operation of a broadcasting service but in the sale of receiving sets. But the obvious desire of the Post Office for a single company was decisive.[5] There can be no question that if the Post Office had wanted to bring about competing broadcasting systems, it would have been possible to do so. Although the two groups may, at the end of their long negotiations, have preferred to have a combined system, they would have been willing to operate independently if the Post Office had wanted them to do so.[6]

---

[1] See the evidence of Sir William Noble to the Sykes Committee, May 8th, 1923, question 237.

[2] See the evidence of Sir William Noble to the Sykes Committee, May 8th, 1923, questions 274–279.

[3] See the evidence of Mr. F. J. Brown to the Sykes Committee on May 2nd, 1923, and of Sir William Noble on May 8th, 1923, question 240.

[4] See the evidence of Sir William Noble to the Sykes Committee, May 8th, 1923, question 238.

[5] Compare the evidence of Sir William Noble on May 8th, 1923, to the Sykes Committee, question 279 : " It was the desire of the Post Office that we should have one Company, and one Company only, and we fell in with the view and eventually the two sides which were in opposition to each other agreed to the view of the Post Office to have one Company . . ."

[6] See the evidence of Sir William Noble to the Sykes Committee on May 8th, 1923, question 353 : " *Mr. Trevelyan*—The groups would have been content rather than not start at all to each have a Broadcasting Licence at the start. The actual arrangement for a single Company was really thrust on you by the Post Office. *Sir William Noble*—That is so ". It is true that had the Post Office insisted on independent operation, this would have happened. And consequently the fact that the Post Office favoured a monopolistic organisation was decisive. But the statement that the " arrangement for a single Company was really thrust " on the radio manufacturers is too sweeping. The Post Office at one stage agreed to independent operation and suggested the outline of such a scheme. Subsequently the firms concerned agreed to a combined scheme ; and in reaching this decision the preference of the Post Office for a single Company was only one of the factors at work.

I shall therefore examine in this section the basis of Post Office policy towards broadcasting and attempt to discover the reasons which led it to favour a monopoly.

The Post Office derived its powers to control wireless telephony in the early 1920's from the Wireless Telegraphy Act of 1904. In this Act it is provided that in order to operate apparatus either for transmitting or receiving wireless signals, it was necessary to have a licence and also that this licence may be in a form and with conditions determined by the Postmaster General.[1]

At first, the Post Office thought of wireless telephony, as did others, as simply a new method of transmitting messages and therefore as requiring co-ordination with other means of communication and particularly with wireless telegraphy. Thus, the Postmaster General in an answer to a parliamentary question on wireless telephony on April 20th, 1920, said: " I am giving every possible facility for its further development, but its progress must be co-ordinated with that of wireless telegraphy ".[2] And later in the same year, in the answer in which the Postmaster General alluded to the suspension of the Marconi Company experiments in broadcasting, he goes on to add: " Experiments are, however, being made to test the practicability of using high-speed wireless telegraphy for news and commercial services, and promising results have been obtained ".[3] Much the same attitude was shown in 1921.[4]

That wireless telephony was considered to have only limited uses and therefore to be of no particular importance, would itself be sufficient to explain the Post Office's lack of encouragement to experiments in broadcasting. But there is, I believe, another factor which should be taken into account. The allocation of wavelengths was the responsibility of the Wireless Sub-Committee of the Imperial Communications Committee. On this Committee there were three Service representatives, one Post Office representative and the representatives of certain other Departments. It was, therefore, a Committee on which the Services were strongly represented.[5] Now we know that it was with reluctance that the Services agreed to wavelengths of 325 to 450 metres being allocated to broadcasting (and then only with restrictions on the hours of service).[6] It seems clear that their opposition would have been very much stronger at an earlier date. The Post Office would have had to exert considerable pressure on the Service Departments—and this they were probably unwilling to do.

---

[1] See the evidence of Mr. R. W. Woods, Solicitor to the Post Office, on May 2nd, 1923, to the Sykes Committee.

[2] Parliamentary Debates, House of Commons, April 20th, 1920.

[3] Parliamentary Debates, House of Commons, November 23rd, 1920.

[4] See the comments of a " high official of the Post Office " on Colonel Carty's experiments, *The Times*, April 13th, 1921, and an answer to a parliamentary question by the Postmaster General, Parliamentary Debates, House of Commons, July 11th, 1921.

[5] See the evidence given by Mr. E. H. Shaughnessy on June 14th, 1923, to the Sykes Committee.

[6] See Sir Henry Norman's statement regarding this in the Minutes of Evidence to the Sykes Committee, May 31st, 1923, question 1909.

But in the Spring of 1922 came the applications from the manufacturers. These had been influenced by events in the United States. But so, too, was the Post Office. Mr. F. J. Brown, Assistant Secretary of the Post Office, had spent the winter of 1921–22 in the United States; he had taken a great interest in broadcasting developments, had discussed the subject with many of the leading authorities in the United States and had attended some of the meetings of Mr. Hoover's first Radio Conference. In the United States at that time there was no effective regulation of the number of broadcasting stations. It seems that the only regulation was of the wavelength on which stations could broadcast—and the only wavelength then allowed was, for most stations, 360 metres. The need for some regulation of the number of stations was evident; and Mr. F. J. Brown was impressed by this as well as by the great strides broadcasting was making in the United States.[1]

The way in which this question was treated in Great Britain led some to conclude that a monopoly was needed in order to prevent interference. Consider the following argument taken from a speech in the House of Commons by Mr. Kellaway, the Postmaster General. "... it would be impossible to have a large number of firms broadcasting. It would result in a sort of chaos, only in a much more aggravated form than that which has arisen in the United States of America, and which has compelled the United States, or the Department over which Mr. Hoover presides, and who is responsible for broadcasting, to do what we are now doing at the beginning, that is, proceed to lay down very drastic regulations, indeed, for the control of wireless broadcasting.

It was, therefore, necessary that the firms should come together, if the thing was to be efficiently done. You could not have 24 firms broadcasting in this country. There was not room .... and it was suggested to them that, for the purpose of broadcasting information, whatever it might be, they should form themselves, if possible, into one group, one company."[2]

Mr. Kellaway does not say that it is necessary to have a monopoly in order that there should not be interference; but the wording would be very liable to cause the incautious listener to imagine that this was so. Certainly many at this time seem to have been confused by the way the problem was presented. For example, a witness before the Sykes Committee[3] having said "It is arguable that there must be one central Broadcasting Authority", was immediately answered by Lord Burnham in the following words: "Is it not a fact; already it is common knowledge; that in America the want of regulation has meant very chaotic conditions ".[1] And there are many other examples.[2]

---

[1] See the articles by Mr. Brown already referred to in note 4, page 194.

[2] Parliamentary Debates, House of Commons, August 4th, 1922.

[3] Mr. F. W. Challis of the Electrical Importers and Traders Association.

But we cannot, of course, assume that the Post Office officials shared this view. It was obvious to them that the possibility of interference made necessary not a monopoly but a limitation in the number of broadcasting stations. Why then was it Post Office policy to bring about a monopoly? Mr. E. H. Shaughnessy, who was Engineer in charge of the Wireless Section of the Post Office, was asked, when giving evidence to the Sykes Committee, about the necessity for a monopoly in transmission. He first referred to the problem of the Marconi Company's patents.[3] But he went on to say that "if they were prepared to licence people, then you would have a very large number of firms asking for permission probably, and some of them might be sufficiently wealthy to put up decent stations—most of them would not—you would have a very great difficulty in acquiescing, you could not acquiesce in all demands. And then you would have the difficulty of selecting the firms which the Post Office thought were most suitable for the job, and whatever selection is made by the Post Office, the Post Office would be accused of favouring certain firms. So that the solution of the problem seemed to be to make all those firms get together to form one Company for the purpose of doing the broadcasting ".[4] There can be little doubt that here we have the main reason which led the Post Office to favour a monopoly. The difficulty of selection if there was not a monopoly must have been in the minds of Post Office officials for some time. It was this problem, as we have seen, which caused the Post Office early in 1921 to prefer to deal with an application from the Wireless Society of London rather than with one from the Marconi Company. Captain G. R. Loring, the Post Office representative, then said: "We cannot give the Marconi Company preferential treatment over any other firm, so that if they asked for permission . . . . half a dozen other companies could come along, and we should have to give them similar permission, whereas if the Wireless Society were to apply it would make it much easier for us ".[1] This point of view was reaffirmed when, in April, 1923, the *Daily Express* applied to the Post Office for a broadcasting licence. Of this, Mr. F. J. Brown said : " The answer which the Postmaster General caused to be sent to this application was this. That he did not want to give facilities to one particular newspaper or organisation which he could not give to other newspapers and organisations and he asked the *Daily Express* how they would propose to meet that difficulty ".[2]

---

[1] See the Minutes of Evidence of the Sykes Committee, May 29th, 1923, questions 1394 and 1395.

[2] The witnesses who appeared before the Sykes Committee on behalf of the National Association of Radio Manufacturers agreed that to avoid unnecessary confusion, broadcasting licences should be granted to one body only. When this was questioned, Mr. G. Burney replied: "We have had a little knowledge of what has happened in the States; it is for that reason that we think it should be under one Authority". See the Minutes of Evidence of the Sykes Committee, May 15th, 1923. Another example is to be found in C. A. Lewis, *Broadcasting from Within* (1923). Mr. Lewis was Deputy Director of Programmes in the British Broadcasting Company. He says: "It may be asked, why did the Postmaster General give an exclusive right to one company only to broadcast? The reason for this is a purely physical one. Assuming the stations to be of a given power and range it is found it is impossible to operate more than eight stations without causing interference between them. The chaotic state of affairs in America, where a large number of stations are transmitting on a narrow band of wavelengths and no form of control exists, was an object lesson in what *not* to do, and consequently the control was put into one company's hands . . ." (pp. 15–16). This is in line with a statement issued by the British Broadcasting Company on April 17th, 1923, in which it was said that the initiative which led to the formation of the Company came from the Post Office "knowing that if the chaos in the United States was to be avoided one broadcasting authority was essential". See the *Manchester Guardian*, April 18th, 1923.

[3] See page 196 above.

[4] See his evidence to the Sykes Committee, June 14th, 1923, question 3095.

There can be no question that there was a very real danger of creating monopolistic conditions in other fields if broadcasting licences were granted to particular firms. The nature of this danger was made evident when the Marconi Company, in April, 1922, proposed to set up broadcasting stations.[3] And Mr. F. J. Brown has said : " It was . . . contrary to the policy of the British Government to grant a monopoly of broadcasting to one, or even to two or three, manufacturing firms, as this would place them in a superior position to their competitors for pushing the sale of their goods ".[4] This aspect of the question seems to have been constantly in the mind of the Post Office. A large number of the modifications to the draft scheme which were put forward by the Postmaster General during the course of the negotiations seem to have had as their aim the protection of the interests of the smaller firms.[5]

But it so happens that the plan for independent operation by the two groups which was evolved in the course of the negotiations was one which avoided this particular difficulty. All radio manufacturers would have been free to join one or other of the groups ; none could have been penalised by the existence of independent broadcasting companies. Yet the Post Office still preferred that there should be a monopoly. The reason is fairly clear. There would still have remained the problem of the allocation of wavelengths and districts between the two groups. And the Post Office could not have avoided responsibility for the solution of these difficult problems. And there is also reason to suppose that the Post Office considered that it would be more economical to have one company instead of two or more.[6]

---

[1] The *Wireless World*, April 16th, 1921, p. 51. For the context in which this statement occurs, see page 192 above.

[2] See his evidence to the Sykes Committee, May 2nd, 1923. The account given in the *Daily Express* of April 14th, 1923, of the Postmaster General's reply is in almost the same words.

[3] See page 195 and 196 above.

[4] See " The Story of Broadcasting in England ", *Radio Broadcast*, June, 1925, p. 176.

[5] B.B.C. Archives.

[6] See F. J. Brown, " Broadcasting in Britain ", *London Quarterly Review*, January, 1926, p. 30. " Moreover, it was clear that if the stations were to be efficient, and if their programmes were to be satisfactory, a very large expenditure would be necessary ; and that if the stations duplicated one another there would be great waste of money." It will be remembered that it was part of the plan for independent operation that the two groups should each operate a broadcasting station in London.

I have described the arguments which led the Post Office to favour a monopolistic broadcasting organisation. The Post Office did not itself wish to operate the broadcasting service.[1] Consequently the only solution was to attempt to establish a single broadcasting company. But the problem to which a monopoly was seen as a solution by the Post Office was one of Civil Service administration. The view that a monopoly in broadcasting was better for the listener was to come later.

---

[1] See Mr. Kellaway's statement, Parliamentary Debates, House of Commons, June 16th, 1922: "I do not regard it as desirable that the work should be done by the Government, and I do not contemplate a condition of things under which the Post Office will be doing this work."

A Note on Profit and Uncertainty

By F. H. Hahn

I

There are two ways of looking at profit: (*a*) either we regard it as a surplus over total cost; or (*b*) as a reward for a specific function. The first of these two views, while useful as a first approach, cannot yield us any satisfactory results in analysis, beyond the bare statement of fact that what is charged above total cost may be called profit, or a surplus going to the capitalist. It will not enable us to distinguish between high and low, excessive or deficient profit, nor will it be very helpful as a tool in the theory of pliopoly and competition. It is the second approach therefore with which we shall concern ourselves.

There are two distinct functions which in economic theory are traditionally regarded as being rewarded by profit: uncertainty-bearing and "organisation". Let us briefly look at the second of these functions. I think it can, and has been, shown that what are regarded as the organisational functions of the entrepreneur are in fact nothing but another method of uncertainty-bearing. Most of the organisational work, including daily supervision and routine, is to-day delegated to salaried officials, and where that is not the case we nevertheless distinguish in theory between "reward for work" (usually the salary he could earn if he hired himself out) and profits proper. The organisational function that remains to the entrepreneur is the broad planning of output, of price policy, and the decision concerning policy in general. It can be seen that all of these functions which the entrepreneur has retained are functions involving a great deal of uncertainty.[1] It is not that no other person is as capable as the particular entrepreneur of taking these decisions, but the fact that their outcome is uncertain, and he will therefore prefer to undertake them himself. If there were no uncertainty, then on this view, there would be no profit, not only because no uncertainty would be undertaken in the strict sense of the word, but also because there would be nothing that could not be worked out and planned by a salaried employee.

We may thus safely say that the only function for which profit can be regarded as a reward is uncertainty-bearing.

---

[1] "In trades in which the speculative element is not very important, so that the work of management consists chiefly of superintendence, the earnings of management will follow pretty closely the amount of work done in the business; . . . ." Marshall, *Principles*, 8th edition, pp. 613–14. Also Knight: *Risk, Uncertainty and Profit.*

II

Two kinds of uncertainty are usually distinguished. (1) Risk, which may be insured against and is determined by known parameters of a probability distribution.[1] (2) Uncertainty proper which cannot be insured against.[2] To the great majority of people this type of uncertainty represents disutility and will therefore only be undertaken at a price. This price is usually called the risk premium, and is a function of the dispersion of the expectations about the mode, the skewness of the distribution, the amount invested, and the time it is invested for. The risk premium is deducted from the average of all the expected receipts weighted by their probability, and the residual thus left has been called " effective " receipt.[3]

Now investors may be divided into groups according to the risk premiums they deduct per unit of investment per unit of time. Thus, for instance, the risk premium deducted by an investor who only wishes for a "certain" annual income is higher than any of the expected receipts from alternative investments, and he will therefore not be prepared to invest in them. But not only do different people deduct different risk premiums from the same expected receipt, but they also deduct different risk premiums for different enterprises. Therefore we define members of our group in such a manner that they deduct the same risk premium per unit of investment per unit of time from the same expected receipt.

From this it follows that members of a lower risk premium group will invest more than those of a higher one in any one kind of enterprise. If there is perfect competition in the sense that no one expects a change in expected prices or costs to follow his entry, then the groups will invest until the ratio of the effective receipts to the pure rate of interest equals the ratio of the investment to the price of gilt-edged securities.

The risk premium is therefore a price for undertaking uncertainty. It tells us the equivalent certain value of an uncertain expected receipt. It follows that the reward for undertaking the uncertainty should equal the risk premium. That is, a person is willing to invest so and so much if there is a chance of earning the full value of the expected receipts. It is therefore only when " expectations are fulfilled " that the investor will get the full reward for undertaking the uncertainty

III

Normal profit may be defined in a number of ways.[4] The best way of looking at it in this context is to regard it as the opportunity cost of entering (or remaining in) one kind of enterprise rather than another. With uncertainty absent it is simply the income an entrepreneur can earn by applying his managerial and co-ordinating abilities somewhere else. If these abilities are possessed to an equal extent by all potential and actual entrepreneurs, then on this view one single " normal " profit would be established in the system as a whole.[1]

---

[1] A. G. Hart: *Studies in Mathematical Economics and Econometrics*, 1942, pp. 110–18: Risk, Uncertainty and the Unprofitability of Compounding Probabilities.

[2] Knight: *Risk, Uncertainty and Profit.*

[3] O. Lange: "A Note on Innovations," *Review of Economic Statistics*, Volume XXV, 1943, pp. 19–25.

[4] Machlup: "Competition, Pliopoly and Profit," *Economica*, February and May 1942.

Let us now, while assuming equal ability of entrepreneurship in the sense of supervision and co-ordination for the moment, make allowance for uncertainty. Then for one single profit to be established it is further necessary that all of the entrepreneurs attach equal uncertainty to all the enterprises in the system, so that they deduct an equal risk premium from each of the various expected receipts.[2] Consistent with the view expressed of profit in a previous section, let us call the reward for supervision and co-ordination simply wage and only the reward for " uncertainty-bearing " profit. We must then ask the question, what is (are) the level(s) of profit thus defined which we may call normal ? Or what is the level of profit, which will result in equilibrium, in the sense that there is no inducement to leave or enter one kind of enterprise rather than another.

Before we attempt to answer that question we must clear up one preliminary point. Assuming a perfect capital market, it makes no difference whether an entrepreneur invests[3] his own or borrowed resources. In either case he will invest until the marginal cost of investing equals the marginal expected effective receipts.[4] It follows that a person A with a risk premium R will invest in any enterprise X more than a person B with a risk premium R_1 where $R_1 > R$, irrespective of the resources A and B own respectively themselves.[5]

In what follows we shall therefore talk of profit on investment[6] and not of profit per unit of output, ignoring whether the resources invested by the entrepreneur are his own or whether he has borrowed them.

Since uncertainty is a phenomenon of the passage of time, or, as Professor Hicks calls it, " dating ", we shall have to consider profits in various periods.

Assume that in period o a person has invested a certain amount in an enterprise A and assume that any one person can invest in one enterprise only.[7] He will then invest until the marginal cost of investing (here assumed constant) equals the marginal effective receipts from investment. It must also mean that since he is free to invest somewhere else and since the marginal cost of investment is assumed constant, the marginal effective receipts he could earn in another enterprise B are equal to those in A.[1]

---

[1] Under perfect competition.

[2] See *post.*

[3] By investment throughout we shall mean real investment including all outlays connected with starting a business.

[4] We are assuming that any person can borrow an unlimited quantity of resources (money) at the same rate as anyone else, irrespective of the difference in the resources they own themselves.

[5] To this it may be objected that the higher the ratio of borrowed to own capital (gearing) the higher the risk. In what follows we shall assume that allowance for this factor is made in the risk grouping of the various entrepreneurs. More will be said about this under the heading of ability grouping.

[6] Profit on investment throughout unless specified means the rate of profit on investment.

[7] This is a realistic enough assumption as long as we exclude the Stock Exchange. For that see *post,* section V.

In period 1 the profit he will have made will equal the difference between the actual and the effective receipts in A. The profit another person earns in B will be similarly determined. There is no reason why these two profits should be equal. For that to be the case the following conditions would have to be fulfilled:

Assuming expectations in period 0 for everyone to be the same, (*a*) these expectations would have had to be fulfilled to an equal extent in both A and B, (*b*) the risk premium attached to different enterprises must have been equal. It is only when these conditions are fulfilled that profits earned in period 1 will be the same for both. It follows that differences in profit are either due to (*a*) or to (*b*).

(*a*) If (*b*) is fulfilled, then it means that the reward for uncertainty-bearing in one enterprise has been higher than that in another and thus *ex post* profits are not equal to opportunity cost. That, however, does not mean that the entrepreneur in A will reduce his investment there or attempt to transfer to B (assuming that this were possible) when the *ex post* profits in the latter were above that of the former. Nor again does it mean that new entrants would automatically be attracted to B. For that to happen effective receipts in B in period 1 would have to be higher than those in A. This would be the case if the elasticity of expectation for both A and B were the same, so that for a given change in current receipts, expected receipts in both A and B would change to the same extent, but since the change in current receipts is not the same for A and B, expected receipts would not change to the same extent.

From this it follows that for the profits earned in period 1 to be equilibrium profits, i.e., such as to induce no change in the relative profitability of A and B, the ratio of the proportional changes in receipts upon which expectations are based must equal the inverse of the ratio of the respective elasticities of expectations.[2] When this condition is fulfilled then the profits earned in period 1 are normal profits in the sense that there is no inducement for anyone to enter (or change to) one enterprise rather than another, and these profits need not be equal.

---

[1] Effective receipts throughout mean expected receipts minus risk premium.

[2] If R_0 and R' are the receipts a change in which causes a change in expectations, and if R_1 and R_1' are the new receipts after the change and e and e_1 the respective elasticities of expectation, then for the expected receipts to be changed to the same extent,

$$e\frac{R_1}{R_0}=e_1\frac{R_1'}{R_0'}$$

$$\therefore \frac{e}{e_1}=\frac{R_1'}{R_0'}\Big/\frac{R_1}{R_0}$$

(*b*) We have already seen that it is possible for entrepreneurs to be divided into rough groups according as they deduct different risk premiums from similar expected receipts. Let the groups be such that although different risk premiums are attached to different enterprises by its members, these risk premiums are the same for all of them.

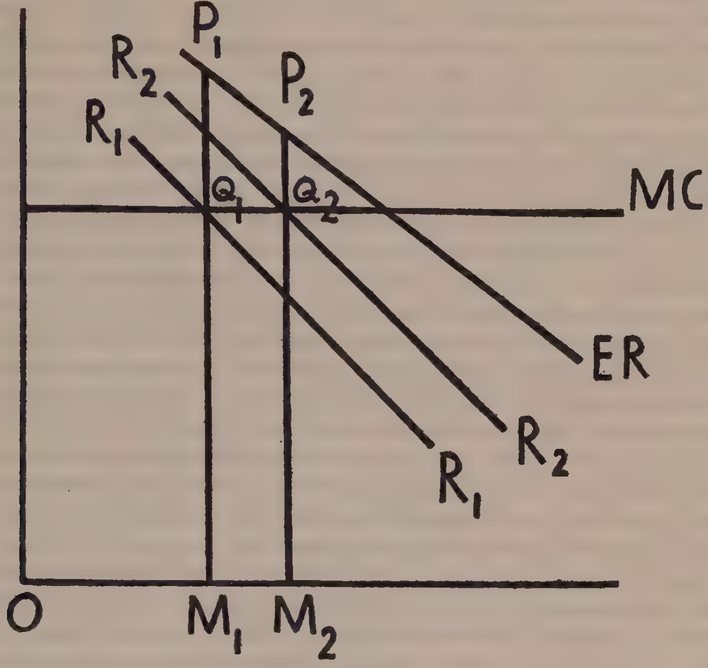


Fig. 1

In the above diagram ER shows the expected receipts from a given kind of investment, where we assume that expectations are the same for all. R_2R_2 and R_1R_1 show the effective receipts for groups 2 and 1 respectively, so that the difference between R_2R_2 and ER equals the risk premium. The same applies to the difference between R_1R_1 and ER. This distance grows with the amount invested. But we have assumed R_2R_2 and R_1R_1 as parallel on the assumption that the risk premium for both groups is the same function of the same variables where the function for group 1 is multiplied by a constant. This assumption is, however, in no way essential to the argument, but simplifies it somewhat.

Each group will then invest in period 0 in that kind of enterprise, until RR intersects the marginal cost curve. I.e., if we take the expected price of the product as given, and regard the expected receipts from investment as a residual after all other costs except costs of investment have been deducted, then within the group this residual will be equalised by competition, but between groups that will not be the case, since groups with lower risk premiums will stop investing at a lower level of the residual than groups with high risk premiums, i.e., they will invest at a higher level.[1]

If expectations are fulfilled in period I then ER will become the curve of actual receipts and the profits will be P_1Q_1 and P_2Q_2 for group I and II respectively. If there is no revision of expectations or risk premiums in period I then the same position will be retained, i.e., ER becomes the curve of expected receipts in period 2 and R_1R_1 and R_2R_2 the corresponding curves of effective receipts. In these circumstances for profits earned to be normal equilibrium profits it is thus necessary that the difference in profits in any one investment should equal the difference in risk premium between any two groups. Within the group profits for any one kind of investment must be equal,[2] and differences in profit between two kinds of investment must equal the difference in risk premium the group attaches to the two enterprises. The same will hold if expectations fall short or exceed actual receipts in all lines of investment to the same extent, for then there will be no change in the relative attractiveness of different undertakings and investment will be increased or decreased uniformly throughout. I.e., there will be no inducement for outsiders to enter one enterprise rather than another. This, of course, assumes that the change in expectations and risk premiums if any is the same for all. This means that no entrepreneur in any one enterprise is earning more or less than he or anyone else could earn somewhere else and in that sense profits are normal.

If expectations, however, are not fulfilled to the same extent, then for no change in the relative attractiveness of any two enterprises to occur it is necessary that the new curve ER in both cases should rise or fall to the same extent. I.e., it is necessary that the the ratio of the proportional changes in receipts in the two enterprises upon which expectations are based, should equal the inverse of the ratio of their elasticity of expectations. (See above.) When that is the case and there has been no change in risk premiums or a uniform change everywhere, normal profits have been earned. If not then there will be an inducement to leave one enterprise and enter another (if that were possible) or an inducement for new entrants to enter one enterprise rather than another until equilibrium is restored. Equilibrium will thus be restored by a fall (rise) of ER in those concerns where it has risen (fallen) relatively more and perhaps a rise (fall) in those where it has risen (fallen) relatively less. So that in the new equilibrium ER will again have risen or fallen to the same extent everywhere.

---

[1] We are here assuming diminishing returns to investment, which assumption is correct for certain ranges. We are also assuming one given scale of production for all the firms within one industry. This assumption is realistic if we abstract from differences in entrepreneurial ability and if we assume that the difference in risk premiums between groups is not high enough to enable any one to produce at a higher scale than another. See also *post.*

[2] Since for any one member within the group the risk premium is as high as that of another.

If we therefore regard normal profit strictly as opportunity cost, i.e., not higher than any one person (group) could have earned anywhere else, then we have seen that the concept really involves various levels of profits given by the uncertainty grouping, and uniform scales of profit on each level given by the differences in risk premiums attached within the group to different enterprises. We have further attempted to lay down the conditions for normal profits to be earned in different circumstances and briefly shown the results of " abnormal " profits in any one enterprise.

Throughout we have abstracted from differences in entrepreneurial ability. The analysis may therefore be thought open to one objection, namely that assuming perfect competition with equal ability, then we would, ignoring differences in location and external economies, expect the cost conditions in any one industry to be the same for any one firm. This however does not follow. In any one group competition will bring about equality between the marginal cost of investing and effective receipts therefrom. Effective receipts are given by the difference between price minus the risk premium and cost excluding cost of investment but including reward for entrepreneurial ability plus risk premium. It follows that if different risk premiums are deducted by different groups, that if they are deducted at the same point of the cost and revenue curve for all groups, effective receipts will not be equal. Since, however, marginal cost of investment is the same for all groups, and since they equate the latter to effective receipts, it follows that these must also be equal. Therefore different groups must be producing at different points of the cost curve. Throughout the complications of large-scale production have been ignored and we have concentrated exclusively on the range of diminishing returns from investment for the system as a whole.

IV

A great deal of attention has lately been paid to the surpluses arising from imperfect competition. Now imperfections can be of various kinds : (*a*) the demand curve may have an elasticity smaller than infinity ; (*b*) the total cost curve may be such that the marginal cost curve cuts the marginal revenue curve when the former diverges from average cost ; (*c*) excess capacity, the latter being regarded usually as a short-run phenomenon ; (*d*) indivisibilities ; and (*e*) imperfection of the capital market, and therefore imperfect competition among potential entrepreneurs. It is the latter with which we shall concern ourselves.

As was pointed out above, we may divide potential entrepreneurs into groups according to their willingness to undertake uncertainty. We may now further divide them according to their ability to undertake uncertainty. This difference in ability is due both to the imperfection of the capital market and to the different resources owned by different investors. This division will be basic and the groups will be non-competing.[1] Of course, the dividing line between them is not clear-cut, and at any one moment those who started an enterprise appropriate to their group may find themselves entering another one, e.g., the successful cobbler becomes a Bata. But before entry this division is both realistic and transition from one group to another unlikely.[2]

Within this broad division we shall be able to trace our previous groups. It may be that ability and willingness to undertake uncertainty are negatively correlated, and that high ability to invest goes with a low risk premium and *vice versa*. Here, however, we shall assume that a clear distinction within the broad division remains.

Let us assume that there is a possibility of starting a given enterprise, but that the market for the products of that enterprise is imperfect, so that if more than one of the potential enterpreneurs entered they would not be able to cover costs. On the other hand, if only one enters then he will be able to earn a surplus above total cost including opportunity cost. There are two possible solutions to this problem : (*a*) either no one starts the enterprise, for fear that someone else may be starting it at the same time ; or (*b*) one of them starts, thus undertaking the uncertainty that someone else might have started at the same time.

Thus *a* might occur if only members of the highest ability group were able to undertake the investment, and if there were no uncertainty groups within the ability groups so that they all attach the same risk premium to the possibility of entrance. *b*, however, would be the more normal case and here the normal sub-divisions would hold.

Here the group that deducts the lowest risk premium or has the highest ability to invest or both will have the greatest incentive to enter. The uncertainty which the risk premium must cover is the possibility of someone of the same uncertainty group entering at the same time, and the ignorance as to the plans of all the others in the various main and sub-groups. The grouping will only tell us which people will have the greatest incentive to invest, and are thus likely to react the quickest. It does not tell us who within the same group or sub-group will have the greatest incentive.

When the plunge, however, has been taken and the investor finds himself alone in the field, then he has earned a potential reward which is equivalent to the value of the risk premium which he had deducted from the expected surplus. We may therefore say that if all his price and cost expectations are fulfilled and he therefore earns a surplus over and above the risk premium attached to the prices and costs, we must deduct the " risk of entry premium " from the surplus before we can talk of a " pure surplus " in the sense of one not covered by any function performed.

---

[1] The best way to look at the " ability division " is to imagine the capital market to attach a certain risk premium to each particular entrepreneur, so that it will be willing to lend the cheapest to the one with the lowest risk premium attached to him. It follows that the one with a high risk premium attached to him cannot compete with one with a low risk premium, but the latter can with the former.

[2] I.e., at any given moment of time an entrepreneur can borrow at a certain rate which is a minimum below which he cannot reduce it.

It would therefore appear that one of the results of imperfection of the market is to afford new opportunity for undertaking uncertainty, and thus of earning the reward for it. We may say that " it creates new costs " to be met and thus makes production more expensive than it otherwise would have been. It does not, however, mean that it enables the entrepreneur to earn the whole surplus as given by the difference between the marginal and average realised cost and realised revenue curve without performing a necessary function for which he expects to be rewarded.

We may also here speak of what we might call a normal potential reward, for if the man with the lowest ability to pay and the risk premium which just exhausts the surplus had undertaken the investment, then there would be no surplus above cost including cost of entry, and normal profits in that sense would have been earned. There is thus an element of arbitrariness in the concept of a surplus above the reward for a specific function arising from imperfect competition, because its size will very much depend on who gets there first, and even though we may *prima facie* say that the one who gets there first will also earn the highest pure potential surplus, nothing really definite can be said.

We may, however, legitimately conclude that the pure potential surplus will be higher the more cheaply the uncertainty is undertaken. We must not, however, conclude that once entry has taken place and the danger passed then the reward for undertaking that danger is no longer necessary because " byegones are forever byegones ". It is a legitimate reward for the undertaking of the uncertainty and if it had not been expected that particular person would not have entered.

On the other hand the size of the " legitimate reward " depends very much on who enters. Thus the only case where we could say that this legitimate reward is uniquely determined is when the only entrepreneurs who can enter are those in the highest ability group in which there are no sub-divisions, so that they are all members of the same risk group, and when no one in a lower ability group is in a low enough risk group to outweigh his relative inability. Here whoever enters gets a reward for undertaking the risk of entry, equivalent to that any other entrant would have received, and the pure surplus (if any) above that, which surplus also any other entrant would have got. If there were no surplus above " reward for entry " then there would be no surplus above total cost as here defined.

It is, of course, possible that a new situation will arise in period 1, namely that it is believed that there is room for one more but not for two. Then the whole process will start all over again. The limiting cases of this, of course, are perfect competition, where there is room for an unlimited number, and pure monopoly, when there is room for one and only one. Imperfect competition where there is room for a finite number lies in between.

Up to now we have assumed that the knowledge of being able to earn a surplus in a particular enterprise is common to all members of all groups, and that therefore those whose ability groups are effective will all be potential competitors. We must now take a more realistic view.

We have already mentioned the arbitrariness involved in "being there first". We must now also allow for the phenomenon of having the "idea first". An idea may be in the nature of appraising the "mood" of the country or a particular market, where by mood we mean the ease with which a particular demand can be created. Under this heading we may include all new commodities, whether new in the absolute sense, or in the sense of being a particular brand. An idea may also consist of a new method of producing existing goods, and therefore the prospect of being able to earn a monopoly surplus for as long as the idea can be kept secret, and until the other organisations can be changed to the new method.

Assume that a member of a group has an "idea" and that he has certain expectations as to the prices of this new product and the cost of providing it. Assume also that he knows that if anyone else entered the same field he would make a loss as above. I.e., the market for his good is imperfect, and he will expect a surplus above total cost including opportunity cost. (If that were not the case then he could only expect to get a quasi-rent for a very short time, before others would enter the field.)

There are then two ways of looking at this problem. (*a*) Either we consider the price he could get by selling his idea or (*b*) we consider the uncertainty that someone else may have had exactly the same, or a similar, idea himself.

Viewpoint *b* again boils down to the necessity of "being there first" to earn that surplus. Since, however, it is seldom that ideas are purely spontaneous, and it is more likely that they are stimulated by a certain "atmosphere", the danger exists that one might arrive second or simultaneously with someone else. If that danger exists then the same analysis as above applies, with the exception that here the probability of the loss will be smaller than in our previous case and thus the risk premium also smaller, and therefore it is likely that a net surplus above the necessary surplus will remain!

This latter surplus we may either ascribe to imperfect knowledge, or, looking at it from the other side, see as a reward for having had the idea first. I.e., we may say that if it is less than what he could get by selling his idea, he will sell it; if it is more, then since he can't "increase" his idea we get a third surplus due to the "indivisibility of the idea". It is only this final surplus that we may call "unnecessary or uncovered by any function".

Of course, if his idea were such that he could patent it, then the danger of loss through entry would be removed, and anything he earns above the amount for which he could sell the patent is his final *surplus.*

From all the above analysis the following conclusions would seem to emerge:

(*a*) When we are investigating any given case we must specify whether it is representative of a firm before or after entry. I.e., whether the "profit maximising" entrepreneur takes his decisions as actual or potential entrepreneur.

(*b*) If he is potential then we must be careful in talking of surpluses not covered by any function; we have seen that two other functions hitherto ignored enter into the picture:

(i) The undertaking of the danger of simultaneous entry and
(ii) the "having" of ideas, initiative or enterprise.

(*c*) That even though there is an imperfect market for goods and an imperfect capital market so that only effective ability groups enter into the picture, there is such a thing as competition for entry, which results in new functions having to be undertaken.

(*d*) If, say, a period has already elapsed since the entrepreneur entered, i.e., it is an old firm, then we must first see how much of his surplus is due to

(i) the above-mentioned factors;
(ii) the undertaking of uncertainty in the ordinary sense of the word;

before we can speak of any rent or unnecessary surplus or of normal or abnormal profits.

V

Before we conclude this note we may pause a moment to consider the real world.

We have already seen that it makes no difference to our analysis whether we regard the entrepreneur as investing his own or borrowed funds, as long as he can borrow as much as he likes at a given rate, and under perfect competition as long as he can borrow at the same rate as anyone else. We must now, however, look more closely at the assumption implicit in our analysis, that to each firm there is only one entrepreneur, for by the device of limited liability and with the existence of the Stock Exchange many one-man businesses have become joint stock companies, i.e., the number of entrepreneurs for any one business has increased.

Now the most important single advantage of limited liability is that it reduces the uncertainty of entrepreneurship and we must thus ask ourselves whether this will affect the analysis based on the grouping of entrepreneurs into various uncertainty groups.

Let us assume that a certain company is to be started and that for that purpose two kinds of securities are issued, one kind A bearing a fixed rate and one a variable one, B, which depends on the expectations of the market. The buyers of the first kind we shall call lenders and those of the second kind (ignoring speculative buyers) entrepreneurs. Let us also assume that another company of exactly the same kind is being started at the same time and that also two securities C and D are issued, where C bears the same fixed rate as A. Assume also that the expectations of the market with respect to the dividends to be earned on B and D are the same. Then any one buyer of the securities of the second type will distribute his purchases between them until the effective receipts from both are equal.

If buyers attach a lower uncertainty to B and D then they will buy more of both and if higher less.

Therefore at any given price of the two securities all those with high uncertainties will hold less and all those with lower ones more of both. The prices of the two securities will be equal to one another so will the risk premiums of all the different buyers.[1] It follows that if expectations are fulfilled the profit[2] will be the same on both kinds of securities and also equal for all who hold them.

This result seems in contradiction with the one reached in section III, where we envisaged different profits for different groups in the same industry. This followed from the assumption of a single entrepreneur, so that the uncertainty was instrumental in determining the point on the cost curve at which each group would operate. When there is more than one entrepreneur this no longer holds and the *rate* of profits for all of them in an industry the firms of which are of the same scale and run with equal ability is the same. Uncertainty here becomes important only in determining *total* profit earned. I.e., groups with high uncertainty will hold fewer securities and thus earn a lower total profit than those with low uncertainty.

We must now also drop our assumption of one single constant rate at which funds can be borrowed. Thus even if we assume that any entrepreneur or any group of entrepreneurs can borrow any amount at a constant rate (until their action becomes monopsonistic) we must take into account the fact that different entrepreneurs or groups of entrepreneurs will be able to borrow at a different rate. That is what in section IV we have called the division into ability groups. Here then our analysis must be confined to those ability groups that are effective, i.e., those whose marginal cost of borrowing does not exceed their effective receipts.

---

[1] Assuming marginal cost of investing constant.

[2] As here defined, i.e., the realised dividend minus the effective dividend of period O.

Here again, if we look at our analysis of section IV, at any given price of a new security those who have bought them will have the same risk of entry premium, where the latter is the premium for the risk that similar securities (of the second type) may be issued and thus lower the price of the first. Those with higher premiums will get a lower and those with lower a higher total "potential surplus".

But I think it more realistic to think either of one entrepreneur only in this connection, who has a given access to the capital market, or of a number of entrepreneurs who are in each others' confidence and decide to enter together. Then if any one of the partners has a higher risk of entry premium than the others, he will contribute less or perhaps stake his reputation to a lesser extent than the others and will thus only receive a smaller total share of the surplus.

The size of the risk of entry premium then depends on whether one single entrepreneur enters or what the risk combination of the partners is. It will also depend on the extent to which a given combination can increase its ability to borrow and thus become more "effective".

VI

We may conclude this note with a brief investigation of the profits earned in an "old" firm under imperfect competition.

In period 0, let P_0 represent the total cost and P'_0 the present discounted value of the effective receipts. Then $P'_0 - P_0 = P''_0$ is the present value of the surplus that is expected to be earned. Let R'_0 be the entry risk premium plus the "price of the idea" which is deducted from the surplus before entry. Then $P''_0 - R'_0 = P^0_s$ is the net present value of the expected surplus, net of the cost of entry.

Let r_0 be the risk premium deducted from the receipts x_0 expected in the first period. Let r'_0 be the entry risk premium, etc., which is deducted from the surplus expected in the first period,,so that $\sum_{r'=0}^{r'=n} r' = R'_0$. Then if x_1 is the actual receipt in period 1 the surplus earned will be given by $x_1 - x_0 + r_0 + r'_0 = \pi$. $\therefore \pi - r_0 - r'_0 = \pi_s$ and is the pure surplus earned as current income.

Now if current receipts in period 0 upon which expectations are based $= x$, then if we define the elasticity of capital value E as the proportionate change in capital value for a proportionate change in current receipts $- \frac{x}{P_0} \frac{dP_0}{dx}$, it follows that P'_0 will have increased to $E \frac{x_1}{x} P'_0$ in the first period.

E is made up of the various elasticities of expectation with regard to receipts in further successively removed periods. E.g., receipts next year may be expected to rise by more than in proportion that current receipts have risen, while receipts the year after that may be expected to rise by less than that.

But we must yet take another factor into account. The risk premiums attached to the receipts may have altered in period 1. Thus if we write R_0 as the sum of the risk premiums deducted from the various expected receipts over time in period 0, and R_1 as the sum of these risk premiums deducted in period 1, then the rise in the present value of the expected effective receipts in period 1 will be given by

$P_1 \frac{x_1}{x} \frac{R_0}{R_1} \Sigma = P_4$.

Then the new value of the expected surplus on capital account will be given by $P_4 - P_1 = P_5$.

From this we must deduct the entry risk premium, etc., minus that part of it which has already been deducted on income account, i.e. $P_5 - R_e + e_2 = P_6$ which is the present value of the expected surplus net of cost of entry.

Then $P_6 - P'_6 = P_7$ is the increase in this net surplus.

Now in period 1 new investment or a change in investment will become profitable. Then if that investment took place straight away, the new total cost is given by P_8. Then our equations for the surplus become $P_4 - P_8 = {}_1P_5$ is the new expected surplus on his investment and ${}_1P_5 - R_e + e_2 = {}_1P_6$ is the new net surplus.

Now let us briefly look at the question of new entry. Outsiders will take our entrepreneur's surplus ${}_1P_5$ into consideration (if they have the same expectations as he). From this they will deduct their own risk of entry premium. But they must also consider in so doing the effect of their own entry on the present surplus being earned, and must therefore include it in their entry risk premium. It therefore follows that as long as R_e for any outsider is above the surplus currently earned by our entrepreneur (irrespective of the latter's own R_e) then there will be no entry.

But as long as our actual entrepreneur is in a risk ability group which is not the lowest for the former concern and near the highest for the latter the danger of potential competition is constantly there. Moreover his potential competitors being in a lower risk premium group will have a lower risk premium all round irrespective of the danger of lowering effective receipts through entry and will therefore value these effective receipts more highly in the first place.

From all this it follows that the actual entrepreneur will have to deduct a new risk premium from his surpluses representing the danger of competition. This will effectively reduce the amount he is willing to invest unless by so doing he lowers the danger of competition by lowering his effective receipts. Another method of lowering the risk of competition is to plough back profits into the concern and thus conceal them.

Potential competition will, however, cease once our entrepreneur has arrived in either the lowest risk premium group or the highest ability group or in both. If he is the sole member of this group then all danger of competition will have passed or at least will have been very effectively reduced and we are as near as we ever shall be to a pure monopoly.

Throughout this discussion we have ignored the question of indivisibility of investment for which factor, however, allowance may easily be made in this analysis.[1]

---

[1] Since this was written I have had the privilege of reading an unpublished paper by Mr. W. J. Baumol in which an approach similar to the above is used.

Book Reviews

The Wealth of England from 1496—1760. By G. N. CLARK. Home University Library. Oxford University Press. 1946. 199 pp. 3s. 6d.

For a generation or more economic historians have busied themselves with the writing of monographs or with treatises (like those of Sir John Clapham and Mr. Lipson) on the grand scale. Few textbooks for the general reader have appeared, and these few serve, for the most part, only to perpetuate ideas which, exciting as they were in the days of Cunningham and Ashley, now appear wrong-headed or, at best, jejune. Here, at last, we have in small compass the essential facts about English agriculture, manufacture, trade, and finance, for the centuries which divided John Cabot from Richard Arkwright and James Watt. The task of writing must have called for concentrated labour, but there is nothing heavy-handed in the book itself: it has the lucidity and grace we have come to expect of everything from the pen of G. N. Clark. If the following comments are critical they are not, the reviewer hopes, captious.

There are a few errors of fact. It is not true (as the reader might gather from a sentence on p. 51) that the first casting of cannon in England took place about 1543: it may be that no cannon had been made entirely of cast *iron* before that date, but many had been produced by the bronze founders. It is not true (as is implied on p. 168) that Abraham Darby introduced smelting with coke in 1735: his father had discovered and made use of the process a quarter of a century before this date. It is almost certainly not true that John Kay's house at Bury was sacked in 1753 (p. 173): well before this time Kay had left Lancashire for France. It is inaccurate to say (p. 141) that the Duke of Bridgewater made " a *network* of canals from his coalfields at Worsley to industrial Manchester ". It is not true that by 1760 the Bank of England had become the only note-issuing bank in London (p. 184). Nor is it true that in 1760 England and France " were still contributing nothing to one another's prosperity " (p. 149): even in this year of war England's exports to France were not negligible, and the interchange of skill and ideas was, of course, substantial.

The chief criticism does not, however, relate to matters of detail. The dust-cover announces that the book " does not wrap up the facts in the theoretical concepts which often make economic history obscure and difficult ". But obscurity and difficulty are not exorcised by a mere refusal to make use of the ordinary tools of economic thought. There are, in fact, many theoretical statements in these papers. A theory of some kind presumably lies behind the obscure sentence (on p. 87) which reads: " When a government was trying to keep up the foreign value of the pound sterling in order to borrow cheaply abroad, it could not afford to encourage exports." There is a theory in the pronouncement (on p. 109) that " Every business man who could do so reduced his costs by mechanization or rationalization; this added to the unemployment caused by lack of demand, and therefore still further reduced the consumers' demand ". And there is a theory of a different kind in the statement (on p. 129) that " When trade was bad prices were low, and this was good for the consumers ". Yet again, Mr. Clark can hardly claim to have freed himself from " theoretical concepts " when he tells us (on p. 170) that machinery was substituted for labour because " Labour became dearer in the industrial districts as they became more populous, and so more dependent on food carried from a distance, and as one growing industry competed against another for hands." It is not a question as to whether the subsistence theory of wages, and the cost-of-production theory of prices, are right or wrong: the reviewer is concerned simply to point out that they are invoked.

The truth is that it is impossible to write economic history without reference to relationships—and that means without reference to some theory or other. A sincere admirer of Dr. Clark's wide scholarship and gifts of expression may be allowed to suggest that *The Wealth of England*, good as it is, would have been a better book if it had been more fully informed with a consistent theory of " the nature and causes of the wealth of nations ".

T. S. Ashton.

La Monnaie et les Systèmes Monétaires. By Bertrand Nogaro. Paris. Librairie Générale de Droit et de Jurisprudence. 1945. 251 pp.

This survey of the " economic problem of money "—to quote Professor Nogaro's Preface—is intended to take its place in a series, under the general editorship of the author, dealing with all aspects of contemporary economics. As such it is designed for the general reader rather than the specialist. At the same time, it represents the fruit of forty years of " research and meditation " (p. 247n) and is therefore prone to offer a rather more intensive study of its subject-matter than is altogether easy to absorb. Nor does the style help, owing to the author's fondness for long and complex sentences whose thread is not easy to follow. For the English reader, however, it offers an instructive study in the main preoccupations of contemporary French monetary thinking.

The book falls into three parts—technique, history and theory. The first reviews the idea of money and its machinery in national and international relationships. Saving always the refusal to regard bank-notes as money (pp. 15–16) which one expects to find in a book of French origin, but which none the less seems to an English reader rather a triumph of prejudice over practice, these pages give a well-balanced introduction to monetary phenomena.

So, too, the objective passages in the second part, which briefly recapitulate the development of monetary institutions, with special reference to the rise and fall of metallic standards, are well done. The lessons drawn from this review, however—more fully developed in the third part—suffer from what appears to English eyes an obsession with outmoded theories. Professor Nogaro is determined to explode the idea that money is a commodity, and again and again he returns to the demonstration that this concept is invalid. In the process he demolishes with equal thoroughness the cruder forms of the quantity theory and the equation of exchange. But his positive proposals are less satisfying.

What Professor Nogaro wishes to substitute for these older views is the unpromising theory that the determinant of the value of money, and the mechanism by which that value is stabilised, is convertibility —in particular, the existence of gold-points (or silver-points) with their consequences, the movements of an internationally acceptable money. It follows that he is unable to conceive of a permanently stable inconvertible currency, the more so as he denies (in a footnote) the validity of the purchasing-power-parity theory (p. 232n). As, however, he demonstrates that a metallic base for money is no longer necessary, he proposes to provide the international currency through an organisation which seems, from the brief outline given (p. 239) to resemble closely Lord Keynes' plan for a Clearing Union.

Perhaps out of consideration for the general reader's unfamiliarity with economic conceptions, no use is made of elasticity of demand, even where this might well have simplified and clarified the exposition (e.g., p. 170); nor do the ideas let loose by the *General Theory* find entrance to its formulations. Indeed, the book is extraordinarily single-minded. It may be that other volumes in the projected series will fill in some of the gaps, but in a book bearing the wide title of *Money and Monetary Systems* one would expect to find some discussion, for example, in rather more than the most general terms, of the peculiarly disturbing influences of inflation upon particular prices and incomes, and of the relationships between demands for working capital or for speculation and the supplies of money. Equally one might have expected some reference to such subjects as Central bank techniques, the Gold Sterilisation policy, invasion currencies, and even Sylvio Gesell—to name four at random.

It is thus a narrowly limited view of his subject which Professor Nogaro has taken. Because he visualises much greater difficulty in sloughing off the tradition of a metallic currency than is easily understood in this country, much of his argument seems to the English reader to be hammering at an open door. It may well be, however, that in France the educative process through which we passed so rapidly in the nineteen-thirties has still to be completed; and if, as a result of this book, French opinion is helped to appreciate the functions of, say, the International Monetary Fund it will not have been written in vain.

J. K. HORSEFIELD.

Recent Banking Developments. By SAROJ KUMAR BASU. Calcutta: The Book Exchange. 1946. xv + 262 pp. Rs. 7/8.

This is a comparative study of changes in banking practices and legislation, covering broadly the period 1933–43, with special but not overweighted reference to their applicability to Indian conditions. Dr. Basu has made good use of the extensive material contained in the League of Nations and B.I.S. Reports, and has synthesised a large number of separate indications into a systematic survey. His book does not claim to make any very original contributions, but it usefully brings out the main tendencies of a decade of rapid development in banking affairs. Unfortunately for its value as a work of reference, it does not contain an index.

The first half of the book is devoted to central banking, and reviews, *inter alia*, changes in legal minimum ratios, relationships with the State, and other aspects of banking policy. It also considers the spread of the newer techniques of control, such as variable reserve ratios and the regulation of margins on security transactions. It is convenient to have the facts marshalled in this way, awaiting the judgment which cannot yet be finally passed upon them, even though Dr. Basu's own comments do not advance us very far towards that judgment.

A second long chapter deals similarly with developments in the field of commercial banking, analysing the principal statistical changes in the collective balance sheets of the principal countries' banks, and discussing the impact of the War upon their habits and conventions. This leads on, in the last sixty pages of the book, to a review of proposals for Banking Reform, which are naturally more preoccupied than the remainder with Indian problems.

Dr. Basu contrives generally to be objective and is always clear. There are a few minor aberrations, of which perhaps the most important is a failure to appreciate the significance of window-dressing in connection with English banks' cash ratios, which he consistently quotes (e.g., pp. 86, 141) as 10–11 per cent. It is also curious to read, apropos nationalisation, the suggestion, quoted from Mr. F. W. Hirst, that the credit of the Bank of England will "suffer irretrievably" by being linked with that of the British Government (p. 69), and to find the "100 per cent. Money" plan described (shades of Joplin!) as "altogether novel" (p. 205).

The publishers are to be congratulated on a freedom from misprints remarkable in a book of non-English origin.

J. K. HORSEFIELD.

Post-war International Lending. (Essays in International Finance, No. 8.) By Miroslav A. Kriz. Princeton University. Spring, 1947. 29 pp.

The "Essays" in this series specialise in surveying contemporary currency, banking, or financial practices, especially in fields where the formation of opinion must await the synthesis of scattered details. They thus seek to furnish contributions towards the body of knowledge from which will be shaped the monetary text-books of to-morrow.

The present pamphlet, mainly factual in content, surveys the international loans granted during the last two years, and compares them with those made in 1919–20. The data are first analysed by borrowers and by lenders, reminding us, for example, that the obligations incurred by the United Kingdom, estimated at $7,250,000,000, amount to precisely half the total international indebtedness created since the end of the war; that Western Continental Europe has borrowed 60 per cent. of the remainder; and that almost two-thirds of the world total of debts so created is due to the U.S.A.

There follows an examination of the extent to which the negotiators of the present loans have avoided the errors of their predecessors, which reaches the cautious conclusion that technically the loans are more sensible in form and in the demands they make on the debtors, but that their independent negotiation has produced a riskily unco-ordinated network, mitigated only by the possibilities unloosed at Bretton Woods. From which the appropriate moral is deduced.

Altogether a worthwhile contribution to an unpretentious but useful series.

J. K. Horsefield.

The Course and Control of Inflation. League of Nations. Economic, Financial and Transit Department. 1946. 132 pp. 5s.

This summary survey of Europe's experiences of inflation after the first World War is divided into two parts. The first seeks to classify these experiences and to exhibit the disruptive forces which caused them. The second brings together data about the methods of stabilisation adopted, and then surveys, very briefly, the whole process of inflation and recovery, country by country, by way of commentary on a series of diagrams.

The value of such a survey at the present juncture is unquestionable; but it is an inevitable outcome of the arrangement adopted that the full analysis of any one country's troubles is split into fragments scattered throughout the book. As, in accordance with the maddening habit of the League of Nations, no index is provided, and the Contents page is more than usually unhelpful, the result is much less useful than the subject would promise. But in any case the text itself falls rather far short of the high standard which we have come to expect from publications in the Economic and Financial Series. Flashes of enlightening commentary are not wanting, but on a more pedestrian plane the short early chapters do not seem to divide their space in any clear relationship to the relative importance of the subjects treated, and the arrangement of the material is not at all easy to follow.

While the book is mainly expository, Mr. Nurkse (who has written Part I) seems to wish to stress " an important element of truth " (p. 54) in the theory that inflations have been caused by deficits in the balance of payments. But the emphasis laid on this and other elements in the situations reviewed is not constant, and the reader is left in doubt as to what weight to attach to the various forces analysed. Perhaps if Mr. Nurkse could have been allowed more space he might have repeated the feat of interpretative survey which he performed in *International Currency Experience.* As it is, the present book promises rather than performs the " analysis and reinterpretation " foreshadowed in its Preface.

J. K. HORSEFIELD.

The Problem of War in Nineteenth Century Economic Thought. By EDMUND SILBERNER. Princeton University Press. Princeton, New Jersey. 1946. 332 pp.

The author in this book continues the publication of the results of his studies on the problem of war in economic thought. A previous book by him was *La guerre dans la pensée économique du XVIe au XVIIIe siècle*, Paris, 1939. The present study analyses the ideas on war of a number of English, French and German economists of the nineteenth century. None of them has actually dealt with the interrelations between war and economic life in a systematic and comprehensive way. But many were induced by events of their time to discuss certain aspects, or they touched the subject incidentally. The majority of writers, moreover, treated the problem more under political or moral aspects than under economic. Both the liberals and the socialists were as a rule convinced that wars were exclusively due to economic causes, and were the work of small minorities. In the eyes of the liberals it was the kings, diplomats, aristocrats and militarists who brought about wars while the socialists charged the capitalists with the responsibility. The evils of war were strongly emphasised both by the liberals and the socialists. The former saw the remedy in free trade, the latter in a social revolution investing the proletariat with power. It must be said, however, that neither the liberals nor the socialists were very careful in proving their theses. Their main fault was that they overlooked the irrational motives of war and the impact of group sentiment. In the eighteenth century Adam Ferguson had shown much more insight into these fundamental problems than most of the economists of the following century. The Historical School and protectionists like Friedrich List were more inclined to take account of the irrational forces, and consequently were sceptical of certain over-optimistic predictions that free trade, or the growing power of public opinion or of the proletariat would soon make war impossible and the factor of nationality unimportant. Whether their own economic and political suggestions were right is another question. But their estimate of the power of the factors endangering peace has been confirmed by the history of their and our times. The idea that the development of a world economy, increasing prosperity and the rising power of democracy and socialism would bring national antagonism to an end has not been realised. It was not merely the outspoken nationalists and militarists who frustrated the striving for world peace and human brotherhood. Even in the ideology of sincere liberals, democrats and socialists there were elements working for war such as the liberal enthusiasm for the liberation of national minorities or the longing of many radicals for a great war which would open a chance for revolution.

The author has given us a scholarly and illuminating book. It is not his fault that the thought of economists presented by him to a great extent was more influenced by wishful thinking and idealistic illusions than by critical realism. Silberner himself often points out the shortcomings and inconsistencies in the arguments of economists of all the schools discussed.

FREDERICK HERTZ.

Basic Problems of Relief, Rehabilitation and Reconstruction in South-East Asia. By J. R. ANDRUS. Oxford University Press. 1946. 74 pp. 5s. 6d.

Dr. Andrus's little book was first submitted as a "data paper" to the Pacific Relations Conference in 1945, outlining the economic conditions which might be expected at the end of the war in the five S.E. Asian countries, Burma, Malaya, Thailand, Indonesia and French Indo-China.

Dr. Andrus begins with a very useful sketch of the pre-war economic background of these countries, giving in a compact form the comparative statistics of their main agricultural and mineral products and their transport and communication facilities. He also brings out the common pattern of foreign economic domination in these countries: the Europeans (generally belonging to the colonial power) owning large-scale commercial and industrial enterprises at the top, the Indians and the Chinese owning a larger number of smaller-scale enterprises in the middle, leaving the indigenous people at the bottom of the economic pyramid with a very small share of the trade and industry of their country in their hands. The relative economic strength of the Indians and the Chinese in a particular country depends on whether it is nearer to India or to China and this also determines the magnitude of the immigration problem from these two countries.

The result of this state of affairs has been a large excess in the value of exports over that of imports, owing to the necessity of making very heavy payments for " invisible imports " such as interest and dividend on capital invested, remittances and pensions of civil servants and immigrants, banking, shipping and insurance charges. In the extreme example of Burma, Dr. Andrus estimates that *per capita* exports amounted to $12.65 against *per capita* visible imports of only $5.60 !

Dr. Andrus's discussion of the problem of Rehabilitation and Reconstruction reveals his detailed factual grasp of S.E. Asian economics and contains many good proposals. It seems, however, to suffer from two complacent assumptions, viz. : (1) that after the war the S.E. Asian countries (except independent Thailand) would be content to resume their gradual development towards the attainment of Dominion Status or its equivalent and would submit to the restoration of pre-war economic conditions under the tutelage of the mother countries ; and (2) that in spite of alleged " economic exploitation ", the pre-war pattern of economic development which has assigned the role of raw material producers to the S.E. Asian countries has been all in the best interests of these countries and the world at large and that, therefore, it should be restored, with certain modifications, as speedily as possible under conditions of freer trade.

(1) Dr. Andrus has underestimated the profound dissatisfaction with the pre-war economic regime in all the S.E. Asian countries. Thus the invariable reply of the nationalist leaders to the argument that they should co-operate in the immediate task of restoring " normal " or pre-war economic conditions, has been that such a process of " rehabilitation " would merely mean the re-establishment of the old foreign stranglehold on the economic life of their countries and that national autonomy must come first so that economic life can be " reconstructed " on an entirely new basis. In Burma at least, suspicion was aggravated when large companies like Steel Bros., etc., instead of resuming private enterprise with their own resources (as Dr. Andrus has assumed) endeavoured to obtain a share of the loan granted by the home Government to Burma, for " rehabilitation charges ". Indeed, it is fair to say that most of the S.E. Asian countries would rather prefer a slower process of restoration (and fighting has broken out in Indonesia and Indo-China) if it would help in laying the foundations of a new economic life in which the indigenous people could obtain a larger share of the wealth of their country.

(2) Thinking in terms of a " new national economy " and industrialisation is generally apt to be more fervent than clear and Dr. Andrus has done a good service in pointing out the dangers of sentimental economic nationalism. He is also right in arguing that even with national autonomy, the S.E. Asian countries in a foreseeable future would have to continue as raw material producers with perhaps a few light industries producing consumers' goods mainly for local consump-

tion. But this is not to say that the pre-war pattern of economic development in S.E. Asia has been for the best from all points of view and that therefore what is needed is merely its speedy restoration under conditions of freer trade. To begin with, there were the political and social complications created by the existence of heavy foreign investment and a floating foreign population (both European and Asian) holding strategic positions in economic life and forming powerful "pressure groups" to promote their vested interests. Dr. Andrus has been too ascetic in leaving these problems out of his strictly "economic" considerations for they must be squarely faced in any realistic discussion of the problems of reconstruction in S.E. Asia. Again, even from a purely economic standpoint, it is by no means easy to establish that the pre-war pattern of economic development has promoted the economic welfare of the indigenous peoples to the fullest possible extent.

In his justifiable reaction against loose moralisations concerning "economic imperialism", Dr. Andrus seems to have gone to the other extreme. He skates lightly over the monopolistic nature of a considerable part of foreign investments in S.E. Asia, particularly in the mining industries, and is too ready to assume that these investments all contributed to the wealth of the country more than they took abroad in dividends. The extent of the rise in the standard of living of the S.E. Asian peoples has never been computed statistically in a reliable manner and when we take into account the social cost involved in using up irreplaceable mineral resources, it cannot be confidently assumed that there has been a large net gain. Nevertheless, foreign capital and technical assistance will be indispensable in all S.E. Asian countries in the foreseeable future and it would be the prime duty of their Governments to create conditions of political stability and confidence to attract outside investors and technicians. However, in order to make foreign investment leave as much as possible in the country after the minimum necessary dividends and profits have been paid off, there would have to be a systematic state supervision and participation in economic life. Further, in order to avoid domination by one particular country or another, borrowing would have to be either from an International Bank such as was proposed in the second part of the Bretton Woods Agreements or from as many countries as possible. Dr. Andrus's hint that future economic domination might well come from the big asiatic neighbours rather than from Europe or America is well taken. However, whether such state supervision and participation in economic life would fit in with the framework of freer trade which Dr. Andrus advocates is problematical.

So far we have been discussing the internal structure of the future S.E. Asian economies. There still remains the broader question whether the pattern of international division of labour which makes the S.E. Asian countries concentrate on agriculture and raw material production is the best pattern. Recently, widespread interests have been roused concerning the possibility of raising the standard of living in backward countries by industrialisation based on the following propositions : (*a*) there is a close correlation, if not a causal relation, between higher productivity per head and the degree of industrialisation ; (*b*) the terms of exchange between agricultural and manufactured products normally tend to go against the former ; and (*c*) there need not be a lesser degree of complementarity (indeed there is some evidence to the contrary) of trade between two industrialised countries compared with the trade between a backward country and an industrialised country. While these discussions are too general and abstract at this stage, they have done much to undermine our confidence in the pattern of international division of labour laid down in the nineteenth century. We are now beginning to realise that the terms of comparative costs depend not only on such immutable factors as climate, geography, etc., but also on changeable factors like technique, education, social and political conditions. S.E. Asia is in the throes of these later changes and it is too early to predict what the long-run equilibrium trends would be. Finally, the S.E. Asian countries have suffered much in the inter-war period from the extreme instability of their monocultural economies. Dr. Andrus is inclined to pooh-pooh this " lop-sided " economic development, but the S.E. Asian countries would think twice about putting all their eggs in one basket again, until the international plans for stabilising the prices of raw materials which are in the making succeed in securing their confidence.

The above strictures, however, do not detract from the usefulness of Dr. Andrus's book, which is one of the few books to present available factual material of S.E. Asian economics in a compact form.

HLA MYINT.

The Import Trade of the Port of Liverpool: Future Prospect. By G. C. ALLEN, F. E. HYDE, D. J. MORGAN and W. J. CORLETT. University Press of Liverpool. 1946. 109 pp. 6s.

This study forms part of the series undertaken by the Social Science Department of Liverpool University with the object of contributing to the solution of the social and economic problems of Merseyside. It consists of four main sections, dealing with (*a*) the United Kingdom's Future Import Trade ; (*b*) the Share of the Port of Liverpool in Britain's Total Imports ; (*c*) Trade in Particular Commodities (i.e., Cotton, Wool, Rubber, Oilseed, Tobacco, Wheat, Sugar, Tin and Fruit) ; (*d*) The Location of Industry Policy and the Port of Liverpool ; and a summary of conclusions. Its main object is to forecast the future import trade of Liverpool by analysing past trends and the effects of the recent World War ; and by comparing the situation, problems and trends after the first and second World Wars. Within the self-imposed limits of the study it is a well-informed and competent piece of work. The first section is orthodox, but is already out-of-date owing to the unforeseen set-back arising out of the coal crisis of the early months of 1947. The other sections show the position of Liverpool in relation to Britain's total import trade, the trade in outstanding commodities, and the Government's Location of Industry Policy, but it is not clear why the import trade should have been thus analysed apart from the export trade, especially when it is claimed in the Preface that the Report has called attention to the " major factors which are likely to influence the future of the Port of Liverpool ". Such a separation is clearly artificial, and can lead to few definite conclusions. Moreover, even with regard to the import trade, there is no analysis of the composition of the total, and the reader is left to work out for himself the relative importance of each of the particular commodities, and their collective share of Liverpool's total imports. A regional study of this type should also include some account of the physical nature, equipment and administration of the Port. Location and hinterland alone do not determine the use made of a port ; port facilities, speed of clearances, and port dues also play their part. Even the hinterland is assumed rather than described. The scope of the study is thus quite inadequate and fails to provide even an outline of the data necessary before any assessment can be attempted of future prospects. It is, therefore, not surprising that the conclusions are most inconclusive. It can only be hoped that the whole problem may be put into its proper perspective by a further study of the export trade, to which should be added some descriptive account of the Port and its hinterland.

VERA ANSTEY.

Review of the Trade of India, 1943–44. Office of the Economic Adviser to the Government of India. New Delhi. January 20th, 1947. ix + 254 pp. Rs. 4-2-0 or 6s. 6d.

The Annual Review of the Trade of India for the year 1943–44 provides, once again, a mine of information about economic conditions in India. But like other mines, there is great variation in the richness of the seams and quality of the ore. Indeed, two years after the end of the war, the chief feeling evoked by the Report is extreme exasperation. It is true that the usual little slip, stating that " for security reasons " some information has been deleted and publication has been delayed, has this year been omitted, but this has in no way affected the deletions and delay. To abandon my metaphor, surely the time has now come to cast aside the statistical purdah, to bring official statistics up to date, and to recast much of the contents of this *Review* so as to give a comprehensive picture of economic trends during—yes, and since—the war, and to provide the essential data that so far have been so carefully deleted ? As it is, the facts and figures have been revised to the end of June, 1944, only; there are far too many corrigenda; the statistical tables mostly contain an extremely bad choice of years—i.e., prior to 1924, and then nothing until 1941, —when what is most wanted is obviously a comparison of the war years with the immediate pre-war period and trend; a number of the statistical tables have empty columns for 1939 on, simply stating that information is not available—an obvious waste of space; and no effort has been made to provide a comprehensive view of the course of trade (values, quantum, price changes, changes in classes of commodities, balance of trade), although information is contained separately about these matters scattered throughout the report. The reader is not even adequately warned how incomplete the information is: the chief warning is given inconspicuously in Chapter VII, p. 128, instead of (as it should be) in large type at the beginning of the report. Incidentally, the comment on the Balance of Trade, that there was a net gain in the favourable balance in merchandise, is misleading as it stands; for whereas the quantum of imports slightly increased, that of exports actually decreased, so that the increased export surplus, in value terms, simply arose from the relative rise in the prices of exports.

Is it too much to hope that the next issue may comprise the whole period since 1944; that new, more comprehensive and more illuminating statistical tables may be devised; and that figures dealing with exports and imports on Government account, since 1939, will be made available?

VERA ANSTEY.

The Sterling Assets of the Reserve Bank of India. By B. R. SHENOY. Indian Council of World Affairs. Oxford University Press. 1947. 160 pp. 8s. 6d.

Professor Shenoy has attempted to make a complete analysis of the accumulation and cost (to the Indian economy) of the sterling balances, of the debtor-creditor status of India, of the varying methods by which the sterling assets might be liquidated, and of how this might best be accomplished from the point of view of Indian interests. What he has failed to do is to visualise Britain's post-war economic position and her balance of trade problem. This is hardly surprising, considering how little appreciation there is in England of the Indian view-point. There is great and urgent need for better mutual understanding. Far less excusable, however, is his proposal that, if British-owned assets in India are offset (in whole or in part) against the sterling assets, the former should, whilst the latter should not, be written down in value to allow for the inflation of the Indian price level. I am not arguing here whether or not the sterling assets should be scaled down (although in fact I hold that this should not be done), but merely that the same yardstick should be used for both sides of the account. It is obviously unfair to make allowance for the relative rise in Indian prices when valuing British assets in India, in terms of sterling, but not to do so when valuing the results of British purchases in India, in terms of sterling.

It is impossible to do more, in this short review, than to pick out one or two of the many interesting, controversial and in some cases highly complicated, issues discussed by Professor Shenoy.

In the first place it can be said that Professor Shenoy has tackled the broader aspects of India's debtor-creditor status most boldly, and —in particular—has made a valiant attempt to estimate the present value of British private investments in India. He concludes that India is still a net debtor vis-à-vis Britain. This is the first estimate I have seen which allows for war-time changes in the value of British assets in India, and it is clear that pre-war estimates need to be drastically written up, whether or not one accepts the actual figures presented by Professor Shenoy. If in fact the total value of these investments is roughly equivalent to or even exceeds the outstanding sterling assets, mutual cancellation would facilitate both Britain's balance of payments problem and India's need for hard currency, although many other factors would also have to be taken into consideration before making a deal. India could then use current exports, otherwise needed to transfer interest and profits on these investments to England, to purchase material equipment from America, whilst England would exchange her present obligations to India for an internal obligation to compensate the expropriated owners. But it must be emphasised again that this should only be contemplated if a fair valuation can be made.

Secondly, it can be said that Professor Shenoy has expressed the Indian attitude towards the sterling assets most clearly and emphatically. It is undoubtedly true that very serious hardships arose out of the forced savings imposed upon the Indian public by deferring all payment on account of the British Government's war-time purchases in India until the war should be over. Coming, as it did, at a time of great scarcity of foodstuffs and consumers' goods, this involved an intolerable reduction in the already precarious standard of life of the poorest classes and of the lower middle classes, especially of those dependent upon more or less fixed money incomes. The peasant cultivators gained some compensation from the higher prices secured for their products either by being enabled to repay debt or by keeping a larger share of their crops for their own consumption. " Intolerable " is not too strong a word, as this policy formed at least one element in the disastrous situation that led to the famine of 1943. Here I fully agree with Professor Shenoy, and must admit that the full implications of the policy adopted have not been appreciated in England. But I also feel that the terrific burden imposed on Britain by her efforts to preserve the ' democratic way of life ' not only for herself, but also for other nations, has not been fully appreciated in India. Certainly Professor Shenoy's suggestion (p. 110) that during the war capital goods might have been sent to India from Britain is completely unrealistic.

In conclusion it can simply be said that this book raises many important and interesting issues and well repays perusal.

VERA ANSTEY.

Actuarial Statistics. Vol. I. "Statistics and Graduation". By H. TETLEY. Published for the Institute of Actuaries by Cambridge University Press. Cambridge. 1946. xvi + 285 pp. 21s.

A First Course in Mathematical Statistics. By C. E. WEATHERBURN. Cambridge University Press. Cambridge. 1946. xv + 271 pp. 15s.

Mathematical Statistics. By S. S. WILKS. Princeton University Press. Princeton. 1943. xvi + 284 pp. 25s.

Each of these three texts is written for completely different classes of readers. Mr. Tetley's book is the official textbook prescribed for the professional examinations of the English Institute and the Scottish Faculty of Actuaries; Professor Weatherburn addresses himself to university students who are interested in Statistics, but whose main interests lie elsewhere, and Dr. Wilks is writing primarily for the mathematical specialist.

Mr. Tetley's book is of particular importance, as actuaries have recently begun to take a greater interest in general statistics and members of that profession are filling many important statistical posts. Statistics is likely to assume greater prominence in the actuary's professional training, and Mr. Tetley's book will therefore serve as an introduction to the subject for an important part of the statistical profession. It is all the more unfortunate that the book is disappointing as a general introduction. Mr. Tetley disarms a certain amount of criticism by admitting that the professional statistician will find the book somewhat unbalanced. Of 285 pages, only 114 are devoted to statistics proper, the rest being given to graduation. Although graduation is more important for the actuary than for the general statistician, one cannot help feeling that the emphasis is a little misplaced. But even the treatment of the statistical part is not altogether satisfactory. There are four chapters dealing respectively with continuous and discontinuous variables, the binomial and normal distribution, correlation and sampling. The last subject is dealt with in 34 pages! No mention is made of partial and multiple correlation, though these techniques have been used in social and regional analyses of mortality and in the construction of life tables by abridged methods, subjects in which the actuarial profession should surely take an interest. There is only the briefest reference to non-linear regression, and no mention of the correlation ratio.

As regards sampling, the author himself states that "Chapter 4 [on sampling] is probably the most important, because it is not until he understands the way in which sample results can be used that a student grasps the idea of statistical inference, which underlies all scientific methods". These sentiments are unexceptionable, but it would be impossible to do justice to the subject in the short space allotted to it. The student who comes fresh to sampling is always a little puzzled as to how it is possible to reason from the sample to the population, and Mr. Tetley's explanation is not altogether convincing. And in talking about sampling distributions, a good deal of the modern work on the subject is ignored. Thus we read on p. 89: "Comparatively little is really known about sampling distributions. In most instances, however, it is assumed that these distributions follow the normal curve of error. Actual experiments show that this assumption is not unreasonable for most functions but it is felt nowadays that very few sampling distributions are really represented by any such simple law."

In fairness to the author, it should be stated that he specifically exempts the χ^2 distribution from these remarks, but he makes no attempt to deal with the many distributions related to it. Nor is any stress laid on the assumption of normality in the parent population. The only tests of significance described are those for the difference between two averages, and between two proportions, and, in each case, the formula for large samples is given without qualification. The approximate formula only is given for the standard error of the standard deviation, and that of the coefficient of correlation is given as $\frac{1-r^2}{\sqrt{n}}$ with the implication that the sampling distribution is normal. It is possible that actuaries will not have much opportunity of dealing with small sampling techniques in the course of their work, though these may be useful in mortality studies, but it is surely undesirable to ignore, even in a first text, all the developments that have taken place during the last twenty years.

It should also be mentioned that in the discussion of moments, the conventional notation is dispensed with, for no good reason.

Graduation, on the other hand, is treated exhaustively with many examples. These chapters, however, will be mainly of interest to the professional actuary, as the practice of graduation has not been adopted to any large extent outside the profession.

Professor Weatherburn has based his book on lectures given to students at the University of Western Australia. He presupposes some mathematical knowledge in his reader, and the exposition is at a level between Yule and Kendall's well-known *Introduction* and the more advanced texts of Kendall, Wilks or Cramér. The need for a book of this kind has long been felt, and Professor Weatherburn is to be congratulated on filling it so admirably. The conventional subjects are dealt with, but special mention must be made of the author's treatment of small sampling distributions. He devotes a lengthy chapter to the properties of three distributions, and then shows that most of the sampling distributions in common use may be regarded as sums, products or quotients of these variates. The treatment is remarkably lucid and brings out well the connection between the different distributions, and the underlying unity of the subject. It is, however, a pity that Professor Weatherburn should not have added an appendix on orthogonal transformations which are used in explaining degrees of freedom. Orthogonal transformations are the only algebraic concept used in the book and an explanatory note would have been welcome. Among other subjects treated are correlation, simple, partial and multiple regression, and the analysis of variance and covariance.

Dr. Wilks's book, which appeared some time ago, is severely theoretical in its nature. It covers most of modern statistical theory, but no examples are given, and the reader is expected to have a good mathematical equipment. The chapters on the theory of estimation and on multivariate analysis are particularly valuable.

E. Grebenik.

SHORTER NOTICE.

Kapitalexport und zwischenstaatliche Warenbewegungen. Eine theoretische Betrachtung. By Jürg J. Schwenter. Verlag A. Francke A.-G. Bern. 1946. viii + 92 pp.

This study—a thesis accepted by the university of Berne—does not entirely fulfil the rather ambitious claims put forward in the Introduction, but it is nevertheless a useful contribution to the literature on international capital movements.

In a careful, if somewhat arid, analysis the author sets out to show the effects which, under various assumptions, the export of capital may be expected to have in the capital exporting and the capital importing country respectively. The most interesting and successful sections are those dealing with the transfer problem under different systems of currency. The analysis is carried out throughout under the assumption of unimpeded international trade, and since the author at the outset rules out all consideration of economic policy, one should perhaps not quarrel with the omission of all reference to the manner in which bilateralism with import quotas and similar trade restrictions is bound to affect the transfer of capital. It is rather surprising, in the face of such theoretical austerity, to find " sympathies " and " antipathies " between countries named as a factor apt to influence the transfer of capital (but not, apparently, the granting or contracting of international loans).

Books Received

ACADEMICUS: *The Budget and After.* Hind Kitabs Ltd., Bombay. 1947. 111 pp. Rs. 3.

AMMON, A.: *Grundsätze der Finanzwissenschaft.* A. Francke AG. Verlag, Berne. 1947. 240 pp. S.Fr. 12.50.

BANAVALIKAR, A. S.: *The Textile Policy of Madras Government.* Printing Press, Delhi. 1947. vii, 64 pp. Rs. 2–8. 4s.

BANK FOR INTERNATIONAL SETTLEMENTS: *Seventeenth Annual Report (1st April, 1946—31st March, 1947).* Basle. 1947. 173 pp.

BAROU, N.: *British Trade Unions.* Victor Gollancz Ltd. 1947. x, 271 pp. 7s. 6d.

BASTER, A. S. J.: *The Little Less.* Methuen & Co. Ltd. 1947. vii, 161 pp. 7s. 6d.

BUREAU OF CURRENT AFFAIRS: *The State of the Nation.* 1947. 48 pp. 2s. 6d.

BURNS, A. F.: *Stepping Stones Towards the Future.* N.B.E.R., New York. 1947. 91 pp.

CAPRARA, U.: *La Banca.* Dott. Antonino Giuffre, Milan. 1946. xvi, 481 pp. L.600.

CROOME, H. M.: *The Candidate's Companion.* Christophers. 1947. vii, 175 pp. 5s.

CRUM, W. L., and SCHUMPETER, J. A.: *Rudimentary Mathematics for Economists and Statisticians.* McGraw-Hill Book Company Inc., New York. 1946. xi, 183 pp. $2.50.

DAMALAS, B. V.: *L'œuvre scientifique de François Simiand.* Deuxième Edition. Presses Universitaires de France, Paris. 1947. xiii, 321 pp. Fr. 400.

DUPRIEZ, L. H.: *Des Mouvements économiques généraux.* Tomes I and II. Institut de Recherches Économiques et Sociales, Louvain. 1947. I: xi, 552 pp.; II: 648 pp.

Farming Efficiency and Costs and Factors Relating Thereto. The Rural Reconstruction Commission, Australia. 1945. 208 pp.

FERGUSON, J. W., and MCHENRY, D. E.: *The American Federal Government.* McGraw-Hill Publishing Co. Ltd. 1947. viii, 818 pp. $3.75. 19s.

FLEISCH, A.: *Ernährungsprobleme in Mangelzeiten.* Benno Schwabe & Co., Basel. 1947. 518 pp. S.Fr. 24.

FRANKS, SIR OLIVER: *Central Planning and Control in War and Peace.* The London School of Economics and Political Science. Longmans, Green & Co. 1947. 61 pp. 2s. 6d.

GAMBINO, A.: *Gli Ammodernamenti Della Teoria Degli Scambi Internazionali.* Cedam, Padua, Italy. 1946. 61 pp.

HALM, G. N.: *Monetary Theory*, 2nd Edition. The Blakiston Co., Philadelphia. 1946. xiv, 491 pp. 21s. 0d.

HANSON, ALICE C., and PEREZ, M. A.: *Incomes and Expenditures of Wage Earners in Puerto Rico.* Department of Labour, Government of Puerto Rico. 1947. 152 pp.

Hare, A. E. C.: *Report on Industrial Relations in New Zealand.* Victoria University College, Whitcombe & Tombs Ltd., Wellington. J. M. Dent & Sons Ltd. 1946. 375 pp. 10s. 6d.

Hicks, Ursula K.: *Public Finance.* The Cambridge Economic Handbooks. Nisbet & Co. Ltd. Cambridge University Press. 1947. xx, 392 pp. 10s. 6d.

Institute of Statistics. *Studies in War Economics.* Basil Blackwell. 1947. vii, 410 pp. 25s.

Isaac, J.: *Economics of Migration.* Kegan Paul, Trench, Trubner & Co. Ltd. 1947. xii, 285 pp. 18s.

Jacoby, N. H., and Saulnier, S. J.: *Business Finance and Banking.* N.B.E.R., New York. 1947. xviii, 241 pp. $3.50.

Jay, D.: *The Socialist Case.* Faber and Faber Ltd. 1947. xviii, 298 pp. 12s. 6d.

Knight, F. H.: *Freedom and Reform.* Harper and Brothers, New York. 1947. vii, 409 pp. $3.50.

Kriz, M. A.: *Post-war International Lending.* Essays in International Finance No. 8. Princeton University, New Jersey. 1947. 29 pp.

Kuznets, S.: *National Product Since* 1869. N.B.E.R., New York. 1946. xvi, 239 pp. $3.00.

Labor Force Definition and Measurement. Social Science Research Council, New York. 1947. x, 134 pp.

Lagler, E.: *Oberösterreichs Landwirtschaft in Zahlen 1939–1945.* Österreichischer Agrarverlag, Vienna. 1946. 72 pp.

Laufenburger, H.: *Finances Comparées.* Recueil Sirey, Paris. 1947. 432 pp.

Lengyel, S. J.: *Insurance Companies' Accounts.* F. W. Cheshire Party Ltd., Melbourne. 1947. 159 pp.

Lerner, A. P., and Graham, F. D. (Eds.): *Planning and Paying for Full Employment.* Princeton University Press. Oxford University Press. 1946. 222 pp. $3.00, 16s.

Locklin, D. P.: *Economics of Transportation.* Third Edition. Richard D. Irwin, Inc., Chicago. 1947. x, 885 pp. $5.50.

Lorie, James H.: *Causes of Annual Fluctuations in the Production of Livestock and Livestock Products.* The University of Chicago Press, Chicago. 1947. 105 pp. $1.50.

Marbach, F.: *Die Kreditschöpfung der Handelsbanken und das Postulat der Verstaatlichung des Kredits.* A. Francke Ltd. Co., Berne. 1947. 75 pp. S.Fr. 3.80.

Marshall, Mary Paley: *What I Remember.* Cambridge University Press. 1947. xii, 54 pp. 7s. 6d.

Memorandum on University Research Programs in the Field of Labor. Committee on Labor Market Research, Social Science Research Council, Washington. 1947. vi, 42 pp.

Metz, H. W., and Jacobstein, M.: *A National Labor Policy.* The Brookings Institution, Washington. Faber and Faber. 1947. ix, 164 pp. $2.25, 13s. 6d.

Mond, A. L. De: *Certain Aspects of the Economic Development of the American Negro, 1865–1900.* The Catholic University of America Press, Washington. 1945. xii, 187 pp.

National Committee on Immigration Policy. *Economic Aspects of Immigration.* New York. 1947. 63 pp.

Nogaro, B.: *La valeur logique des théories économiques.* Presses Universitaires de France, Paris. 1947. viii, 185 pp. Fr. 200.

P.E.P.: *Report on Britain and World Trade, 1947.* 194 pp. 18s.

Peace and the Public. Longmans, Green & Co. 1947. iii, 59 pp. 2s. 6d.

Piatier, A.: *Le Controle des Changes.* Vol. I. International Studies Conference, Paris. 1947. 210 pp. Fr. 200.

Pigou, A. C.: *Aspects of British Economic History 1918–1925.* Macmillan & Co. Ltd. 1947. viii, 251 pp. 15s.

Robinson, Joan: *An Essay on Marxian Economics.* 2nd Edition. Macmillan & Co. Ltd. 1947. ix, 104 pp. 6s.

Sarma, N. A.: *Expansion of World Trade and Employment.* "Commerce", Bombay. 1947. xii, 117 pp. Rs. 2–8–0.

Sarma, N. A.: *Social Security.* National Information and Publications Ltd., Bombay. 1947. viii, 81 pp. Rs. 2–4–0.

Schorer, H.: *Festgabe.* A. Francke Ltd., Berne. 1947. 268 pp. S.Fr. 20.

Schroder, E. F.: *The Marginal Utility Theory in the United States of America.* Centrale Drukkerij, N.V., Nijmegen. 1947. 121 pp.

Steinemann, E.: *Die Volkswirtschaft in der Neuen Schweiz.* Genossenschaftsdrückerei, Zurich. 1947. 127 pp. S.Fr. 4.

Tarshis, L.: *The Elements of Economics.* Houghton Mifflin Company, Boston. 1947. 699 pp. $4.50.

Towle, L. W.: *International Trade and Commercial Policy.* Harper & Brothers Publishers, New York. 1947. xiii, 780 pp. $4.50.

Vickery, W.: *Agenda for Progressive Taxation.* The Ronald Press Co. 1947. xi, 496 pp. $4.75.

Vince, A.: *La Doctrine Américaine de la Porte Ouverte en Chine et son Application dans la Politique Internationale.* Jacques et Demontrond, Besançon. 1946. 148 pp.

Weber, M.: *The Theory of Social and Economic Organization.* William Hodge & Co. Ltd. 1947. 404 pp. 30s.

Whitaker, T. K.: *Financing by Credit Creation.* Clonmore & Reynolds Ltd. 1947. 67 pp. 3s. 6d.

Wight, M.: *The Gold Coast Legislative Council.* Nuffield College. Faber and Faber Ltd. 1947. 285 pp. 12s. 6d.

Wilcox, W. W.: *The Farmer in the Second World War.* The Iowa State College Press, Ames. 1947. xii, 410 pp. $4.00.

World Trade Centre in San Francisco. Board of State Harbor Commissioners to the Legislature. 1946. 200 pp.

Made and Printed in England by The Hereford Times Ltd., General Printing Works (T.U.), London and Hereford. L4385.

In Memory of Sidney Webb

By R. H. Tawney

It is fitting that someone should undertake the task assigned me; but I approach it with some diffidence. When I saw our founder for the last time, in June of this year, the School and its progress were much in his mind; and, could he have known that a tribute was to be paid to him, he would certainly have chosen as its setting the institution which, of all his many creations, remained to the end nearest his heart. But neither he nor Mrs. Webb—I must speak of them together, for one cannot think of them apart—took kindly to ceremonial occasions. They disliked, in particular, that personal note which, I am told by persons experienced in these matters, specially appeals to the public; and, indefatigable lecturers though both of them were, I am not sure that they would have enjoyed being turned into the subject of even the briefest address. So I have a slight sensation of speaking under disapproving eyes, as though Beatrice, her skirts turned up and crouching over the fire, were ejaculating into one ear "Beware of dilettantism", and Sidney, full length on the sofa, were murmuring into the other "Above all, no intimacies".

The latter injunction I propose to follow. The Webbs, when off duty, were known to their friends as two sociable people, with a psychological curiosity not too elevated to enjoy gossip, an engaging capacity for laughing at themselves, and an appetite on the part of one partner for physical exercise, defended by her with arguments, hygienic and ethical, of appalling particularity and irresistible cogency, against which the other periodically rebelled, but always, in my experience, rebelled in vain. They are also, however, historical figures, and figures whose stature increases as their world recedes. They faced great issues, and grappled then with them in a great way. They changed thought and action. They conquered for knowledge and made habitable by man departments of social life which, before them, had been a trackless jungle. They researched, wrote, agitated, administered, and—since only the last stages of legislation take place in Parliament—were not the less legislators because, save for ten years when both were over sixty, County Hall and the British Museum saw more of them than Westminster. If a man looks back on the successive chapters of English social history from 1880 to 1930, he will find few problems which they failed to illumine, few abuses against which their blows were not the heaviest struck, and few reforms in which they did not play a decisive, if often a deliberately self-effacing, part. The authors of such achievements have no need of the small change of reminiscences to perpetuate their memory. The noblest of all titles, they used to say, is that of servant. The legacy, scientific and practical, of their half-century of devoted labour is the monument by which we may most fittingly recall them.

If the work of the Webbs is too massive for biographical gossip, the attempt to provide them with intellectual ancestors is equally superfluous. Historians of political thought are apt to be obsessed with origins and pedigrees, as though ideas were transmitted in the same manner as property, and different attitudes to society, and theories about it, succeeded each other by direct descent. To most of us, who take our views at second-hand, that procedure may apply. Where creative minds are concerned, it is absurdly off the mark. Original people are not links in a chain; more often they are breaks in one. Presented with the metaphorical torch, which each generation is supposed to hand on to the next, they insist on making certain that it is what it is alleged to be. If it turns out on investigation, as not infrequently it does, to be not an authentic illuminant, but a smelly taper, they incontinently blow it out, and proceed to replace it with lamps of their own. The Webbs were voracious readers, endowed with memories of embarrassing efficiency, which armed them with precedents for every innovation and rarely left them at a loss for apt quotations from authors who would have trembled with apprehension at the alarming causes that they were cited to support. But their position is not to be understood by analysing it into elements derived from different sources; it was too much their own.

It is interesting that Sidney should have been nurtured on the purest milk of Victorian Radicalism; that he should have attended lectures on Natural Science by Huxley—an occasion on which, since the course was confined to workers in industry, he put down his trade as that of a wood-carver, on the ground that he would carve if he could—and that he should have thought that, if a theory of value was necessary to salvation, the article provided by Jevons was a less unhandy instrument than that supplied by Marx. It is more significant that, at an age at which most well-to-do young people have not yet left the University, he had seen the inside of a broker's office in the City and of three government departments; that his first paper to the Fabian Society, at the age of twenty-six, had the characteristically incisive title, *The Way Out*; and that, when offered Liberal constituencies to stop his mouth, he decided that there was more both to be done and learned on the L.C.C. than in Parliament. It is interesting that Beatrice should have been brought up in an atmosphere compounded of London Society, country houses and the Big Business which kept both the merry-go-rounds spinning; that she should have mixed from childhood with the scientists and men of letters whom her father, a civilised capitalist, invited to his house; and that the most intimate of her parents' friends, at whose feet for a time she sat, should have been that forgotten celebrity, Herbert Spencer. It is more significant that at twenty-five she had outgrown him; that when the sage, whose long suit was not humour, pressed her, with kindly obtuseness, to begin her life-work with a study of "the absorbent organs in the leaves, seeds and roots of plants", she already knew that the subject on which her heart was set was the strange ways of man in commerce with his kind; and that the influence which finally clinched her decision to devote her life to social research came, not from books or teachers, but from sympathies aroused and lessons learned on the occasion of a month's visit to some Lancashire cousins, who, when her own branch of the family had been wafted upwards, had remained operatives at Bacup. Neither of them was of the kind which is disposed to take opinions from a master. Each of them independently had gone young through the business of settling accounts with current cant, whether to right or left, which is the necessary preliminary of serious work. One of the partners, according to his own account, had been converted to Socialism by a lecturer at Birkbeck College, an otherwise unknown Mr. Smith. As, however, what convinced him of the virtues of public ownership, and set him agog to propound plans for applying it, was the fatuity of the arguments advanced by Mr. Smith against it, he was not an example of the docile disciple. The abandonment by the other of the creed which she later described as "agnosticism tempered by individualist economics" was slower and more painful. It had taken place, in all but name, before she completed her book on Co-operation.

Both possessed the fire at the centre without which great things are not done. But, having made up their minds on first principles, they took their work too seriously to be emotional about it; and there is a sense in which the fact that they were Socialists is less important than the kind of Socialists they were. They looked at facts through plain glass; held that light, not heat, was the world's chief need; saw no reason why the devil should have a monopoly of the business virtues; and thought that the enemy was most likely to be brought to terms, not by blowing dogmatic trumpets round his walls, but by mobilising against him the organising ability and systematised effort which were his special boast. They regarded the Co-operative Commonwealth neither as a distant Utopia nor as the inevitable climax of an irresistible evolution, but as an edifice to be constructed piece-meal by hard practical labour, an edifice which—since its building was a long-term job—had better be begun here and now, and to which system, method, application, technical skill, a reasonable consideration for the prejudices and susceptibilities of ordinary men and women, and, above all, knowledge, made a more useful contribution than untutored enthusiasm.

They approached that task from slightly different angles. Mrs. Webb's introduction to economic questions had been that of an investigator employed by Charles Booth. For the decade following her marriage, she remained primarily a student, though a student who found in the service of social causes the inspiration to her work. Her husband, after ten years in the Colonial Office, to which, a generation later, he returned as a Minister, had been elected to the London County Council in 1892. As chairman of its Technical Education Committee, into whose orbit he contrived to sweep, much to the benefit of the service, almost the whole of London's Higher Education, he was a busy administrator, though an administrator with a profound conviction of the dependence of social progress on systematic research and the application of its results. But they saw theory and practice as the complementary aspects—the staff-work and operations—of a single campaign. Each laboured unceasingly and simultaneously at both, and both threw their whole souls into each. This School, the chief venture of those years, was designed by them, not as a cloistered college, but as a mundane institution, round which should eddy and roar the full tide of London life. The supercilious description of it given me in a more secluded University—"One of those places like Selfridge's, isn't it ?"—though its hint of financial prosperity is unfortunately unfounded—conveys a suggestion of workmanlike realism which its founders, so far from resenting, would have welcomed as a compliment.

The first publication of each of them appeared in the same year, when, in 1887, one produced the first edition of *Facts for Socialists* and the other an article on *The Dock Life of East London*. The last, a joint work, *The Truth about Soviet Russia*, was published in 1943. In the interval they were responsible, usually, though not always, as partners, for some forty-five volumes, apart from a long list of pamphlets—Webb produced at least forty-seven, and probably more, for the Fabian Society alone—articles, essays and introductions to books by other authors. To appraise in their totality the contributions of authors so wide in their range and so exhaustive in detail is a task, not for an individual, but for a corps of specialists, and I have no intention of attempting it. The common characteristic, which sets its stamp on all their writing, so that a reader familiar with it can tell at a glance whether an anonymous tract is from their pen or not, is a matter, not of style, but of substance. It is the impression conveyed of vast reserves of ordered knowledge. Whether the result is a brochure, like *English Teachers and their Professional Organisation*, or the 600 odd pages of *The Parish and the County*, there is the same patient care in assembling materials, and the same self-restraint in refusing to suggest conclusions till the evidence has been sifted. That feature of their work is accompanied by two others which are even more impressive. The first is an extraordinary gift for illuminating generalisation. The Webbs, for all their wealth of data, were never at the mercy of them. They valued facts, not for themselves, but for the meaning to be extracted from them. If discovery is the revelation of significant, but previously unrealised, relations between phenomena, then, in their own field, they were discoverers. The second characteristic is equally remarkable. It is their power to carry conviction to their readers, and to do so, not by eloquence, or pathos, or other literary artifices, but by the weight of massed evidence and a measured force of argument, which strikes home to the mind with a kind of inevitability, as though what was speaking were the voice, not of two fallible mortals, but of Society herself, instructing her foolish children how to learn to live at peace.

It is these qualities, the fruits of an immense effort of self-discipline, which cause the Webbs' books to stand out, amid the trivialities both of their day and ours, like Roman masonry in a London suburb. Few historical works, and, I suppose, few economic, even among those of both which matter, can expect a life of as much as ten years. The Webbs' studies of Trade Unionism contain, doubtless, some statements and interpretations which require, in the light both of subsequent developments and of later work, much of which they inspired, to be qualified or supplemented. They remain, however, after the lapse of half a century, not only alive, but incomparably the best English treatment of it. Of the ten volumes on Local Government, six, at least, will never need to be re-done, and will last, with minor additions, as long as their theme. They not only let a flood of light into a score of obscure corners, but effected a Copernican revolution in the approach to the subject, by proving both the origins and the principles of our modern system to be widely different from those previously assigned it. Their central argument—the revolution effected through the supersession, as the controlling force in local government, of little oligarchies of producers and traders by the citizen-consumer—agrees so admirably with the philosophy elsewhere expounded by their authors, that the critical reader is tempted to suspect that the Webbs' success in producing at the right moment a lively rabbit from the hat must be due to the fact that they first put it there ; but, if they did any conjuring, I, at least, have failed to detect the sleight of hand. It is simpler to believe that history was kind enough to confirm their theories because, from the start, they based their theories on history.

It belonged to the studies which the Webbs made their own, as well as to their characters, that knowledge and its application should go hand in hand. They were not of the generals who rarely see the line, and they did their share of hard fighting, as well as of staff work. An account of their activities in the thirty years between their marriage and Webb's election to the House of Commons would fill a volume, and a mere catalogue would be pointless. But, if a man reflects on the changes which have taken place in certain large departments of social policy and the Webbs' share in producing them—if he considers, for example, education ; public health, the Poor Law and the social services in general ; plans for the prevention of unemployment ; industrial legislation in all its branches, in particular the legal enforcement of minimum standards ; the extension of public ownership and control, and—not least—municipal enterprise and local government—he is unlikely to conclude, I think, that the patient labourers ploughed the sands, or to challenge the statement that posterity, if it owes most to the ideas which flowed from them, owes also not a little to their willingness to submit to the drudgery of themselves toiling to realise them. Before their retirement, they could have pointed, had they cared to do so, to that most convincing of compliments which is paid when opponents claim the credit for measures once denounced by them, and friends dismiss reforms for which formerly they laboured as antiquated trivialities too commonplace to deserve mention. In reality, there is nothing which would have interested them less. Two-thirds of their working lives were passed in a world where, not only was the existing order firmly in the saddle, but, outside small circles, the very possibility of a workable alternative to it was regarded as, at best, an interesting speculation. They accepted that situation in order to end it. Studiously moderate in speech ; regular in their habits and frugal in their expenditure ; a model of domestic felicity ; Beatrice with a touch of ascetic austerity, as of the lay-sister of some order ; Sidney with the air of scientific detachment which is said to have caused one ingenuous coal-owner to be overheard in 1919 saying sadly to another, " I told you we made a mistake in not hiring that man Webb ", these demure representatives of the bourgeois virtues belonged in reality to the dangerous handful of human beings, perhaps half-a-dozen in a generation, who live for an idea. They organised their lives as the servants of a cause for which no labour could be too great and no task too small.

It is of the nature of political thought, from Aristotle to the present day, that much of its best work is topical. It achieves immortality, if at all, not by eschewing the limitations of time and place, but by making them its platform. As is not uncommon in the case of great people, the premises of the Webbs were more important than the particular conclusions derived from them. The fathers of Socialist thought, both British and Continental, had belonged to the pre-democratic era. With some exceptions, they had passed their years of maturity in the two generations between the Revolution of 1830 and the *Commune* of 1871, or, if a later date be preferred, the third English Reform Act. Their philosophies might enshrine truths of permanent significance. Their conceptions of political strategy were necessarily the product of the circumstances surrounding them. The Webbs, whose entry on the tasks of adult life began in the early 'eighties, accepted in broad outline, without slavishly reproducing them, some of their predecessors' criticisms on the economic order, but rejected their political deductions as generalisations made obsolete by the movement of events. They saw, not indeed alone, but with an unrivalled breadth of comprehension, that the changes of the intervening period had not only strengthened the demand that government should assume enlarged responsibilities for promoting social welfare, but were adding year by year new wheels to the mechanisms required to discharge them. To repeat old formulæ, while ignoring new facts, appeared to them sciolism. Their life-work was the expression of a habit of mind which, while tenacious in its grasp of principles, was realist, experimental and constructive in applying them. It was to show how, political democracy once established, it could grow, if it pleased, not indeed without arduous struggles, but without chaos or catastrophe, into social democracy.

The things necessary to salvation they believed to be two. The first was primarily a matter of the intellect. The conception of a social order planned, with general consent, for the common good has a long history behind it ; but earlier prophets of the destination had rarely mapped the roads. The Webbs were strong where their predecessors had been weak. Prescription without diagnosis they dismissed as charlatanism, and diagnosis was a task to which virtuous intentions were less necessary than hard work and a sound technique. Hence their long list of books on particular topics, and their refusal to formulate a philosophy except by way of comment on the specific subject in hand. Hence also their view of the path by which their goal must be attained. Their gradualism was not, as was absurdly suggested, the expression of a preference, as though loitering were their favourite foible, but a recognition of the facts of a world where life is lived in time. They were the last persons to wait on events, when it was in their power to accelerate them ; and for the authors of real changes, whether small or great, whether a clause in a factory act or a five-year plan, they had a profound respect. But they were free from the illusion—odd, but not uncommon—that barking is synonymous with biting, and were aware—a physiological truth not always remembered—that the latter operation, in order to be effective, requires that, at some stage of the proceedings, open mouths should be shut. They were impatient, therefore, of criticisms without affirmations, refused to preach ideals till they had found a way to realise them, and thought that invention and construction—the production, as they put it, of " new social tissue ", not denunciation or demolition, was the root of the matter. Romantic or self-advertising revolutionaries, all rhetoric and blank cartridges, usually bored, and sometimes irritated, them.

The truth that social processes, in order to be controlled, must be known thoroughly and in detail was the Webbs' first legacy to the causes to which they gave their lives. The second, though less obvious, was equally important. It was the temper and habit of mind which they brought to the service of them. Like most of us, they would have welcomed the discovery of a short cut to their objectives ; but they knew too much of social history, contemporary affairs and the nature of their fellow-countrymen, to suppose that that recurrent illusion has any basis in realities. While not of the kind to shrink from drastic action when circumstances required it, they were impatient of the pretence that mere emotional demonstrations are either action or drastic. With all their belief in Trade Unionism, they never succumbed to the overestimate of its possibilities which was visible in some quarters before the first world-war, and lingered, a disastrous legacy, for seven years after it. They had come, by the middle 'twenties, to the conclusion that, at least in the case of the more important industries, national stoppages had had their day ; and they regarded the events of 1926 as a monumental folly—a generous, and, in the case of thousands of unknown men and women, who risked everything for a principle, an heroic folly—but a folly none-the-less. Believers themselves in persuasion by an appeal to reason, and holding, as Webb used to say, that " morality is in the nature of things ", they regarded truculent vapourings, whether from right or left, with a mixture of aversion and contempt, as revealing, in British political conditions, when not the mere vanity of the *poseur*, an unpardonable bankruptcy of character and intelligence. The remark of, I think, Cavour, which Sidney sometimes quoted—" any fool can govern in a state of siege "—expressed an attitude which he shared, and I recall the exclamation—" There's blood in this "—with which, after a heavy day, he darted off one critical evening in the hope of persuading the editor of an influential paper to cease sowing the whirl wind. The enthusiasm of both of them for Russia was a tribute paid, neither to the first turbulent phase, on which their comments had been less than polite, nor to a dictatorship in the reality of which, whether rightly or not, they only half-believed, but to the " planned production for community consumption " which was the chief subject of their study.

Their admiration for that aspect of Russian life, as also for several others, was genuine and profound. It was qualified by a dislike for the atmosphere created by what they described as " the disease of conformity " ; and, not being simpletons, they did not suppose that a social system born of one climate and soil could be transplanted to another. Having made up their minds that Socialism could be made to come in England by the processes of democratic government—of course suitably accelerated—and could not be made to come by any other, they were at pains to exemplify in themselves and to encourage in others the mentality and habits which democracy requires. They made a practice—the first essential—of treating with respect opinions which they did not share. In the distant days when the question of rate-aid for denominational schools caused gnashings of teeth, Sidney, himself an agnostic, lost some valued friends by supporting the principle. His duty, he said, was not to some children, or to most children, but to all children ; and no child should suffer, if he could prevent it, from over-crowded classes and insanitary buildings, merely because its parents' convictions differed from his own. As a member, nearly twenty years later, of the Commission on the Coal Industry presided over by Lord Sankey, which met almost daily for five months in a glare of publicity, and on which feelings sometimes ran high, he did not pull his punches ; but his refusal to resort to the controversial tricks, by which most of us endeavour to put our adversaries in the wrong, was a model for all who heard him, and the letter which he subsequently received from the leader of the other side, thanking him for his unfailing fairness, was a credit to both of them. In dealing with those of their own not too easy household, both he and Mrs. Webb were consistently unsectarian; insisted that the points on which British Socialists are agreed are both more numerous and more important than those on which they differ; and were tolerant, not only of opponents, but—a more difficult accomplishment—of embarrassing friends, presumably with the reflection that a large dose of imbecility is a necessary ingredient in any movement which aspires to be representative.

Their private life was, as private life should be, of a piece with their public. The picture of Beatrice as a cross between an academic pedant and a hard woman of affairs did not survive the publication of *My Apprenticeship*; and the caricature of Sidney as a bureaucratic energumen, all pigeon-holes and statistics, was equally infelicitous. In reality, he was a man of unusual breadth of culture; widely read, not only in the English, but in the French and German, literature of his large range of subjects; and, for all his mastery of organisation, with a grasp of the ends that the machine exists to serve which caused him, when asked the name of the greatest Socialist he had known, to give, without a moment's hesitation, the unexpected answer, William Morris. Of the characteristics which they had in common, simplicity and magnanimity were, perhaps, the most striking. The combination of worldly wisdom with personal unworldliness, though rare, is not unknown. The Webbs possessed it in more than ordinary measure. While they knew exactly what they wanted, and had few rivals in the business of "getting things done", their achievements owed more to integrity and single-mindedness than to the artful astuteness ascribed them by the credulous. Some hard knocks came their way, not only from opponents; but to bear no grudges was part of their creed. It was easy to disagree with them, but difficult to stage a quarrel; and, when friends insisted on nursing grievances, they were indefatigable in their efforts to re-knit broken links. In the interlude between the wars, they discerned symptoms of a disposition to stop ears and close minds, which seemed to them ominous; and their later writings sound a note of warning not heard in their earlier work. But their old age was free from disillusionment or cynicism. They never lost their faith in public spirit, guided by knowledge, as the architect of a better world. It was as an institution through which knowledge could be increased, and public spirit fostered in ever widening circles, that they founded this School.

The Distribution of Incomes

By F. A. Cockfield

1. Most natural distributions can be represented by mathematical formulæ. The distribution of incomes among individuals is no exception. The real difficulty lies, of course, in finding the appropriate mathematical function and in the case of the distribution of incomes the position is somewhat complicated by the lack of reliable data.

2. The proposition, which has been widely accepted, that the distribution of incomes is logarithmic was originally put forward by Vilfredo Pareto (*Cours d'économie politique:* Lausanne, 1896–97, Vol. 2, Book 3, Chap. 1, "La courbe des revenus"). "Pareto's Law" —to employ its usual name—has received some criticism in recent years and the object of the present article is to re-examine the law and, if necessary, to attempt to devise a formula which will fit the *present* income distribution *in this country* with greater accuracy. The qualifications are necessary because it should not necessarily be assumed that the distribution of incomes always obeys the same law in all countries at all times.

3. Pareto's Law can be expressed in one of several forms: either by reference to the cumulative frequency of incomes *above* a particular point, or by reference to the frequency of incomes *at* a particular point, or by reference to the cumulative amount of *income* above a particular point. All three equations can be derived from one another. It does not matter, therefore, from the point of view of the development of an exposition of the subject, which of the three formulæ is used. In most instances in this article, the first formula will be the one employed for practical examples, as in many respects it presents a more easily intelligible picture. It is proposed, therefore, to start with this formula and derive the other two from it.

4. The first formula can be expressed in the form:

$$N = Px^{-p}$$

where N is the cumulative number of incomes *above* the point x, and P and p are constants. The sign of p is negative as the curve slopes downwards, for there are fewer incomes above any particular point on the income curve than there are above any lower point: this must necessarily follow unless there were a negative number of people in a particular income range.

5. The second formula, which gives the frequency of incomes *at* a particular point in the income scale, is obtained by differentiating the first equation:

$$F = -\frac{dN}{dx} = Ppx^{-p-1}$$

If x is expressed in £'s then F is the number of incomes *at* the point £x per £ step.

In differentiating to obtain this expression for the frequency the sign has, of course, been changed as the frequency is the rate of *decrease* of N.

6. The third equation, which gives the cumulative *income* above a particular point, is derived from the second equation.

The frequency of incomes at the point £X_0 is:

$$F_0 = PpX_0^{-p-1}$$

The amount of these incomes is:

$$\begin{aligned} I_0 &= PpX_0^{-p-1} \, . \, X_0 \\ &= PpX_0^{-p} \end{aligned}$$

The total amount of all incomes above x is given by the integral of this equation:

$$\begin{aligned} I &= \int_x^\infty Ppx^{-p} \, . \, dx \\ &= \frac{Ppx^{-p+1}}{p-1} \end{aligned}$$

7. All three of these formulæ are logarithmic and are themselves downward-sloping curves.

It will be remembered that a logarithmic curve when plotted on a double log scale appears as a straight line. This is a valuable property as it reveals at once whether a number of given points fall on a logarithmic curve or not. For this reason, the diagrams in this article will be drawn on a double log scale.

8. Subject to certain minor reservations, which will be discussed later, it has usually been accepted that Pareto's Law adequately describes the distribution of incomes in the higher ranges. There has, however, been some difference of opinion as to what constitutes the " higher ranges ", some writers using the term to denote, substantially, the Surtax sphere, i.e., incomes above £2,000, others using it to refer to incomes above a point as low as £500. As regards the distribution in the lower ranges, most writers have preferred to reserve judgment. An estimated distribution of incomes right down to £125 is given in Dr. Barna's recent work, *Redistribution of Incomes Through Public Finance in 1937*, but this distribution is apparently based on a fairly detailed distribution of incomes for 1938–39 given in reply to a Parliamentary Question of 7th July, 1942. (*Hansard*, 23rd July, 1942, Vol. 382, No. 93, Cols. 200/202). No real attempt seems to have been made to derive the functional relationship governing the actual distribution itself. Such an attempt was, however, made by Dr. E. C. Rhodes in an Article in *Economica* in August, 1942. Working on the basis

of the income distribution for the year 1940–41, which appeared in the 1942 White Paper on the National Income and Expenditure (Cmd. 6347), Dr. Rhodes succeeded in fitting an exponential function, not greatly differing from the normal curve, to the distribution of the smaller incomes, while retaining the Pareto curve for the higher incomes. The resulting distribution consisted of two parts, a " head " comprising the incomes up to £250, and a " tail " comprising the incomes above £250. The fundamental difficulty with a distribution of this kind, however, is not mathematical but philosophical, for it is implicit in such a distribution that the incomes in the higher ranges are governed by a different law from the incomes in the lower ranges, a point which Dr. Rhodes himself was at pains to develop. Dr. Rhodes' distribution, therefore, provides no final solution, but only succeeds in raising a further question, namely, why should the smaller incomes and the larger incomes be governed by different laws ? Unless this question can be satisfactorily answered, the distribution itself is left hanging by its own bootstraps.

9. The first step in any attempt to judge the validity of Pareto's Law or to suggest an alternative formula, must be a critical examination of the data. So far as this country is concerned, the only information of real value consists of official income statistics, all of which have been derived ultimately from Inland Revenue sources ? Nearly all the private estimates which have been made have, in fact, been based on these statistics. The income statistics available can be summarised under the following heads :

(1) Before the 1914–18 war the Annual Reports of the Commissioners of Inland Revenue[1] used to contain an analysis in income ranges of the income assessed to tax under Schedules D and E. The last year for which these figures appeared was 1913–14, the figures being published in the 58th Report (Cd. 8116 of 1915).

(2) For all years since 1911–12 the Inland Revenue Reports have contained each year an analysis in income ranges of the incomes assessed to Surtax. The first Report containing these figures was the 56th Report (Cd. 7000 of 1913).

(3) A distribution of incomes for the year 1918–19 was prepared at the request of the Royal Commission on the Income Tax and published as a White Paper (Cmd. 224 of 1919) and republished in a revised form in the 63rd Inland Revenue Report (Cmd. 1083 of 1921).

(4) A similar distribution for the year 1919–20 was published in the 64th Inland Revenue Report (Cmd. 1436 of 1922).

---

[1] These Reports will be referred to as " Inland Revenue Reports ".

(5) In 1942, income distributions for the years 1938–39 and 1940–41 were published in reply to a Parliamentary Question (*Hansard*, 23rd July, 1942, Vol. 382, No. 93, Cols. 200/202).

(6) Since 1942, estimates of the distribution of incomes in broad ranges have appeared each year in the Annual White Paper on the National Income and Expenditure. (Cmd. 6347/42, 6438/43, 6520/44, 6623/45, 6784/46, 7099/47). The first year for which these estimates was given was 1940–41.

(7) An income distribution for the year 1937–38 was contained in the 83rd Inland Revenue Report published in 1946. (Cmd. 6769/46.)

Item (1) is of little value for the present purpose as, quite apart from the fact that the information is now many years out of date, the figures relate to *assessments* under various Schedules and not to the *total* income of individuals: an individual might have two or three different items of income assessed under different Schedules.

Of the remainder, the greater part, namely items (3), (4), (5) and (6), consists of estimates and is therefore of doubtful value for our present purpose. The danger is that the statistics may themselves have been obtained by the use of a curve which produced results which were not at variance with whatever actual data may have existed, e.g., figures of total income or yield of tax. An analysis of the figures is likely to do no more than produce the formula used in constructing the estimates. To regard the statistics as "proving" the formula is simply chasing one's own tail.

This leaves only the annual Surtax statistics and the 1937–38 distribution published in the 83rd Inland Revenue Report. Both of these consist of actual ascertained figures. The Surtax statistics are collected from the actual assessments. The 1937–38 distribution was based on a special Income Census conducted by the Inland Revenue authorities just before the war. It will be on these two sets of figures that most of the present discussion will be founded.

10. Table 1, which is based on the results of the 1937 Income Census, shows the number of incomes in various ranges of total income above £200 as assessed for the year 1937–38. A column has been added to show the cumulative frequency. The cumulative frequency is also shown in Figure 1 on a double log scale. As is apparent from Figure 1, the points representing incomes above £2,000 lie very close to a straight line, i.e., the distribution is logarithmic. Below £2,000 there is considerable divergence from the straight line.

11. The first step will be to draw a straight line which will represent what the distribution would be if it were logarithmic throughout its entire length. Precisely where this line should be drawn is a matter of rather nice judgment. It would be possible to compute mathematically the curve of closest fit to the given points but this would assume that all the points were of equal validity, which, as

TABLE I.

INCOMES ASSESSED FOR THE YEAR 1937–38.

Range of Income	*Number of Incomes in the Range*	*Cumulative Frequency*
£200– 220	755,781	4,112,938
220– 250	800,446	3,357,157
250– 300	811,502	2,556,711
300– 400	710,358	1,745,209
400– 500	315,444	1,034,851
500– 600	176,815	719,407
600– 700	108,275	542,592
700– 800	73,810	434,317
800– 900	53,460	360,507
900– 1,000	40,374	307,047
1,000– 1,500	112,448	266,673
1,500– 2,000	50,919	154,225
2,000– 2,500	28,364	103,306
2,500– 3,000	17,827	74,942
3,000– 4,000	20,302	57,115
4,000– 5,000	11,049	36,813
5,000– 6,000	6,740	25,764
6,000– 8,000	7,383	19,024
8,000–10,000	3,753	11,641
10,000–15,000	4,195	7,888
15,000–20,000	1,569	3,693
20,000–30,000	1,130	2,124
30,000–50,000	589	994
Over £50,000	405	405
TOTAL ..	4,112,938	—

will be seen later, they are not. In fact what will be done will be to draw a line through the points representing the Surtax incomes and extend this line backwards. The Surtax income points do not themselves lie precisely on a straight line: in particular there is a noticeable falling away in the case of the points over £6,000 and also a slight shortfall at the £2,000 point. Both these phenomena are well known and various explanations for them have been put forward. For the moment it is simply proposed to accept the fact that these two particular divergencies exist and to draw the line as nearly as possible through the remaining points. The actual line which appears in Figure 1 has been drawn through the £2,500 point (cumulative frequency 74,942) and the £6,000 point (cumulative frequency 19,024). The formula for this line is approximately:

$$N = 15704\, x^{-1.56603}$$

N is measured in millions.

12. This straight line will in future be referred to as the "Pareto curve", the distribution it represents as the "Pareto distribution" and so on. It should be borne in mind that although the Pareto curve is referred to as a "straight line", it is only straight where drawn on a double log scale: on a natural scale it will appear as a J-shaped curve.

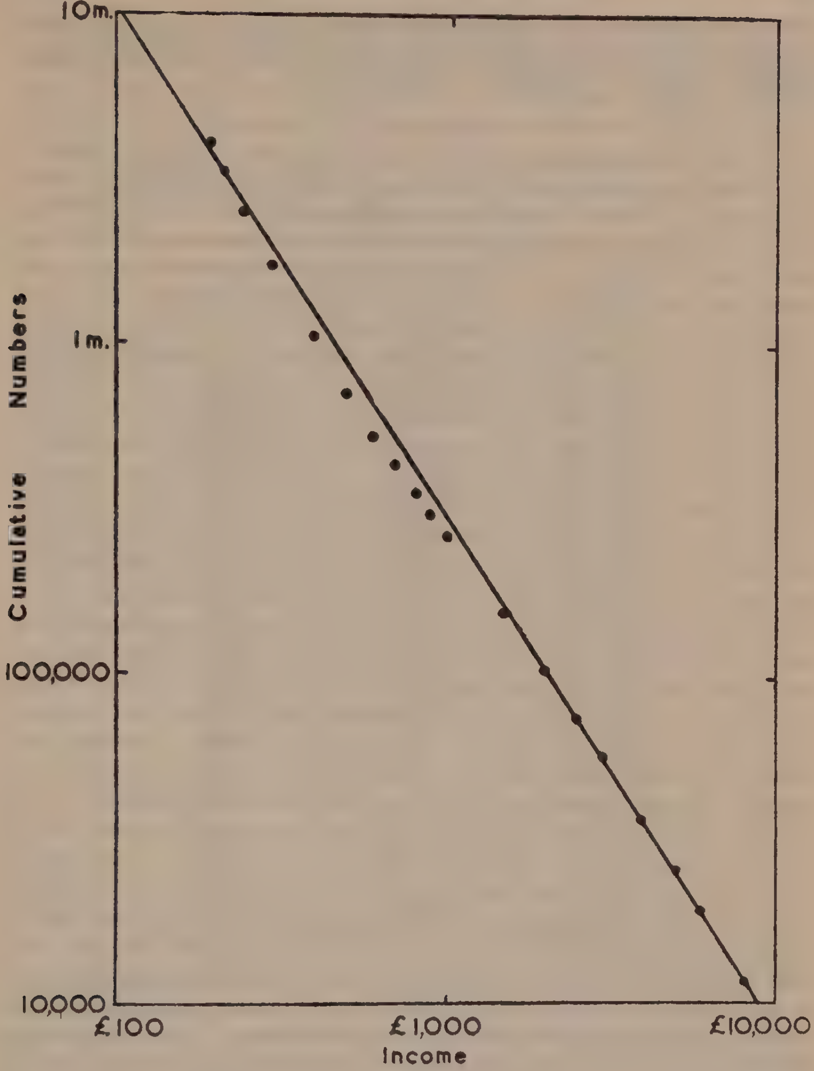


FIG. 1. Cumulative Frequency of Incomes assessed for the Year 1937–38.

13. Except in the two particular instances to which reference has already been made, the Pareto curve provides a fairly good fit in the case of the Surtax incomes. Below the £2,000 mark, the actual distribution falls considerably short of the Pareto distribution, except at the £200 point where the actual distribution *exceeds* the Pareto distribution. The curve in Figure 1 represents the cumulative frequency and it is not very easy to see directly from it in what particular income ranges the deficiencies and excesses occur. For this

reason the numbers in each income range as given by the Pareto curve have been calculated and are given in Table 2 with the actual numbers added for purposes of comparison.

TABLE 2.

INCOMES ASSESSABLE FOR THE YEAR 1937–38. COMPARISON OF THE NUMBERS GIVEN BY THE PARETO CURVE WITH THE ACTUAL NUMBERS.

Range of Income	*Number of Incomes in the Range*	
	Pareto Curve	*Actual*
£200– 220	543,000	755,781
220– 250	612,000	800,446
250– 300	685,000	811,502
300– 400	752,000	710,358
400– 500	390,000	315,444
500– 600	231,000	176,815
600– 700	150,000	108,275
700– 800	104,000	73,810
800– 900	75,000	53,460
900– 1,000	56,000	40,374
1,000– 1,500	148,000	112,448
1,500– 2,000	60,000	50,919
2,000– 2,500	31,000	28,364
2,500– 3,000	19,000	17,827
3,000– 4,000	20,000	20,302
4,000– 5,000	11,000	11,049
5,000– 6,000	6,300	6,740
6,000– 8,000	6,900	7,383
8,000–10,000	3,600	3,753
10,000–15,000	4,000	4,195
15,000–20,000	1,600	1,569
20,000–30,000	1,400	1,130
30,000–50,000	840	589
Over £50,000	690	405
TOTAL ..	3,913,000	4,112,938

As can be seen from the Table, the Pareto numbers fall short of the actual numbers up to about £300 : from £300 to £2,500 the Pareto numbers substantially exceed the actual numbers : and thereafter the two sets of numbers correspond fairly well except in the case of the very large incomes. Perhaps it should be said that from the point of view of judging the "goodness of fit" of the Pareto curve, the cumulative frequency provides a much better visual criterion, as a comparatively small displacement of income can have a really disproportionate effect on the distribution in income ranges.

14. Is it possible to provide any reasonable explanation of the divergence between the Pareto distribution and the actual distribution, or should the results of the 1937 Income Census be regarded as demonstration that the distribution in the lower income ranges is not logarithmic ?

15. The total income given by the 1937 Income Census was £m. 1,990. The corresponding figure, that is for incomes over £200, given by the Pareto distribution is £m. 2,165. The Pareto income, therefore, exceeds the actual income by £m. 175. Part of this difference, however, is accounted for by the deficiency in actual incomes above the £6,000 mark. Whatever may be the cause of this deficiency, whether it is due to legal avoidance or the effect of heavy taxation, particularly the Death Duties, on the higher incomes, the deficiency itself is a well known phenomenon and ought, therefore, to be excluded in comparing the actual income with the Pareto income. The actual income above £6,000 as given by the Census amounts to £m. 247.4: the Pareto income amounts to £m. 315.8, a difference of approximately £m. 68. If this is deducted from the total Pareto income (it is immaterial whether it is deducted from the Pareto income or added to the actual income), the total Pareto income becomes £m. 2,097 and the difference between the Pareto income and the actual income is reduced to £m. 107. This £m. 107 is wholly attributable to the "sag" in the actual distribution below the £2,500 mark (or the £2,000 mark if we bear in mind that there always is a deficiency just above the £2,000 point).

16. A clue to the reason for this "sag" can be found in the fact that the Census figures relate not to all income assessed to tax but to personal income only: personal income excludes Company Reserves, the income of Life Insurance Funds, income going to Non-Residents and various other items. The figures for personal incomes are taken from the individual income tax returns. In its origins the Income Tax was a tax on income as such and not on individuals receiving income and it was founded on the principle of taking the tax from the income at the source irrespective of the individual to whom the income might flow. This system of collection of tax at the source has substantially survived as part of the existing machinery of collection. In the case of dividends, interest, etc., tax is deducted at the Standard Rate and this will in fact represent the actual tax payable except where the taxpayer is liable to Surtax or is only liable at the reduced rate or is exempt altogether. In all other cases, the correct tax is paid automatically by deduction at the source. This, of course, is well known and it does sometimes lead to the taxpayer not exercising the same measure of care in completing his Income Tax Return in so far as it relates to taxed income. In cases of this nature, dividends are sometimes returned at the net figure (i.e., the actual amount received by the taxpayer *after* deduction of tax) instead of at the gross: sometimes a round or approximate figure is inserted and sometimes the income is omitted altogether. All this does not affect the amount of tax payable but it does affect the amount of income disclosed. The taxpayers concerned are the "Standard Rate payers", i.e., those above the point at which the Standard Rate begins to be payable but below the Surtax limit. In 1937 a person became liable to the Standard Rate at £235 if he were single and his income wholly

unearned, at £315 if he were married and his income wholly unearned and at rather higher points if he had children or other dependents or if part of his income were earned. The particular deficiency mentioned will, therefore, occur somewhere between the £2,000 point at the upper end and a point round about £300 at the lower end. This in fact is precisely where the "sag" in the actual distribution does occur. This seems, therefore, a not unlikely explanation of the deficiency in the income disclosed by the Census. Is it possible to make an estimate of this deficiency?

17. Most of the basic information necessary to make such an estimate is to be found in the 82nd Inland Revenue Report (Cmd. 6099 of 1940) but it will also be necessary to make estimates of various quantities not directly given in that Report. The method followed will be to take total income brought under assessment and to deduct from it the earned income which can be calculated from the figure given for earned income relief: the figure remaining will represent unearned income and it will be necessary to deduct from this the amount of unearned income which does not accrue to individuals. The resulting figure will represent personal unearned income and this can be compared with the unearned income figure given by the Census.

The computation is as follows:

Total "actual" income assessed for the year 1937–38 ..			£m. 3,231
Earned Income Relief	£m. 400.4		
The rate of the relief was ⅕: the allowance corresponds therefore to an Earned Income of ..		£m. 2,002	
Add Earned Income above the £1,500 limit on which no allowance is due (estimated)		120	
		2,122	
Deduct Unearned Income on which Age Relief[1] was given (estimated)		74	
Net Earned Income			2,048
Unearned Income			£m. 1,183
Deduct Non-Personal Income (estimated):			
Company Reserves	£m. 235		
Interest on Life Insurance Funds	50		
Miscellaneous, including the profits of Local Authorities after deducting interest paid	12		
Income of Non-Residents ..	35		
Total			332

[1] The figure for Earned Income Relief *includes* the Age Relief.

Personal Unearned Income ..	£m. 851
This figure is the unearned income of all individuals above the exemption limit of £125.	
Deduct unearned income of individuals whose total income is between £125 and £200 (the Census starting point) (estimated)	110
Unearned Income of Individuals over £200 ..	£m. 741

This figure of £m. 741 compares with a figure of £m. 642 given by the Census, an increase of £m. 99. Adding this £m. 99 to the Census total income of £m. 1,990 gives a revised total income figure of £m. 2,089. This compares very closely indeed with the adjusted Pareto income of £m. 2,097.

18. There are two further points to be considered before summing up. Firstly, the Pareto distribution produces approximately 3,900,000 individuals above the £200 mark compared with the Census figure of about 4,100,000, a deficiency of 200,000. Relatively speaking this is not perhaps a very large number but there is in any event an adequate explanation of the deficiency. The income covered by the Census is nearly homogeneous in the sense that it relates to the same period, but not quite so. Before the war, both profits and salaries were assessed on a preceding year basis and Schedules A, B and C were virtually static from one year to another. The Schedule A revaluation was in 1936, so that the Schedule A income for both 1936 and 1937 would be virtually the same. Wages, however, were assessed on the current year basis. The Census, therefore, contains the profits, salaries, etc., of 1936–37 but the wages of 1937–38. Wages were rising in this period, the rise in wage rates between the two years being about 3⅜ per cent. ; total wages above the exemption limit of £125 increased by no less than £m. 60. The effect of this would be to bring into the Census figures not only a year's increase for the people who were above £200 in 1936–37 but also all the individuals who in 1936–37 were below £200 but above about £193. Before the war wage earners were mainly in the below £200 classes and there might well have been sufficient of them in the £193 to £200 group to account for the discrepancy of 200,000 between the Pareto numbers and the actual numbers. If this explanation is right it would, of course, be necessary to deduct from the actual income figures the additional income included as a result of this growth in wages. The 200,000 people moving just over the £200 point would have a total income of £m. 40 : to this must be added the year's *increase* in income of those who were already over £200 : putting this as a rough guess at £m. 10 gives a total of £m. 50 to be excluded from the actual total income. This reduces the total income figure to £m. 2,039, leaving a gap of £m. 60 between the adjusted Pareto income and the adjusted total income.

The growth in wages may not have been entirely responsible, however, for the deficiency of 200,000 in the Pareto numbers. The deficiency may in part be due, very simply, to the Pareto line having been pitched a fraction too low. The effect, however, of making an adjustment on these lines, i.e., assuming part of the difference in numbers to be due to the increase in wages and part to the line having been pitched too low, is to leave a gap of about the same amount, i.e., £m. 60 between the actual and the Pareto income.

19. Secondly, we must adjust for a host of miscellaneous items all of which result in the actual income being smaller than it should be and all of which relate wholly or mainly to the lower part of the scale in which the "sag" occurs, e.g., the accruing interest on National Savings Certificates, which is not liable to tax: the omission of certain Government and other interest which is paid in full and to which the same considerations as mentioned in para. 16 apply: the effect of conventional assessment under Sch. B and to a lesser extent under Sch. A. These miscellaneous factors would account probably for at least £m. 50 between them. This gives a final actual income figure of say £m. 2,090 compared with the Pareto figure of £m. 2,097.

20. Whatever the precise amount of these adjustments, clearly any gap which may exist between the actual income and the Pareto income is extremely small. One would not, however, expect in the case of an enquiry of this sort, based as it is in some measure on estimates, to produce an exact correspondence in the figures. Indeed, too close a correspondence is a matter for suspicion rather than satisfaction. The closeness of fit achieved in these computations is certainly well within the margin of error which might be expected and the enquiry can reasonably be regarded as accounting satisfactorily for the apparent gap between the actual and the Pareto income.

21. Is it a fair inference from this that the true distribution in 1937 was logarithmic, at least so far as incomes above £200 are concerned? It is submitted that it is. For not only has total income been reconciled but the explanation put forward as accounting for the major part of the disparity, namely the understatement of unearned income taxed at the source in income tax returns, would convert a logarithmic distribution into precisely the same kind of distribution given by the 1937 Census, for its effect would be to displace individuals downwards in the income scale and result in too few numbers in the middle and a piling up at the bottom where unearned income would be fully included because repayment was due. It is felt, therefore, that the explanation is adequate and that, subject to the reservations as regards the higher Surtax incomes, the 1937 distribution can be regarded as conforming to Pareto's Law.

22. The next step will be to investigate whether the distribution still remains logarithmic or whether any fundamental change

in the nature of the distribution has occurred as a result of the war.

Since 1942, estimates of the distribution of incomes in broad income ranges have been given in the Annual White Papers on the National Income and Expenditure (see para. 9). The first of these estimates was for the year 1940–41 and annual estimates have appeared since. The 1940–41 estimate showed total income in ranges only, not numbers: the later estimates have shown both incomes and numbers but the point is not very material. An estimate for 1938 has been included since 1943 to provide a pre-war basis of comparison. Similar but rather more detailed estimates for 1938–39 and 1940–41 were also given in reply to the Parliamentary Question of 7th July, 1942, to which reference has already been made.

23. The distributions for 1938, 1942 and 1945 (the latest available) are shown in Table 3. The cumulative frequency is also shown and this is plotted in Figure 2.

TABLE 3.

DISTRIBUTION OF INCOMES IN 1938, 1942 AND 1945 AS GIVEN BY THE ANNUAL WHITE PAPERS ON THE NATIONAL INCOME AND EXPENDITURE.

Figures in 000's.

Range of Income	*Number of Incomes in each Range*			*Cumulative Frequency*		
	1938	1942	1945	1938	1942	1945
Under £250	Not Stated	Not Stated	Not Stated	—	—	—
£250– 500	1,745	5,500	5,400	2,545	7,015	7,592
500– 1,000	500	1,110	1,650	800	1,515	2,192
1,000– 2,000	195	295	410	300	405	542
2,000–10,000	97	102	124	105	110	132
Over £10,000	8	8	8	8	8	8

The 1938 distribution is simply a slightly modified form of the 1937 Census distribution and shows the same "sag" characteristic of that distribution. The 1942 and 1945 distributions show a very remarkable change for the "sag" has been replaced by a decided "bulge". None of these distributions is based, as the 1937 Census distribution was, on the collection of information regarding every individual in the tax field. They are simply estimates. The real question which has to be answered is whether these estimates are justified in indicating as they do a radical change in the nature of the distribution. It is only if that question can be answered in the affirmative that there is any real point in attempting an analysis of the distributions themselves.

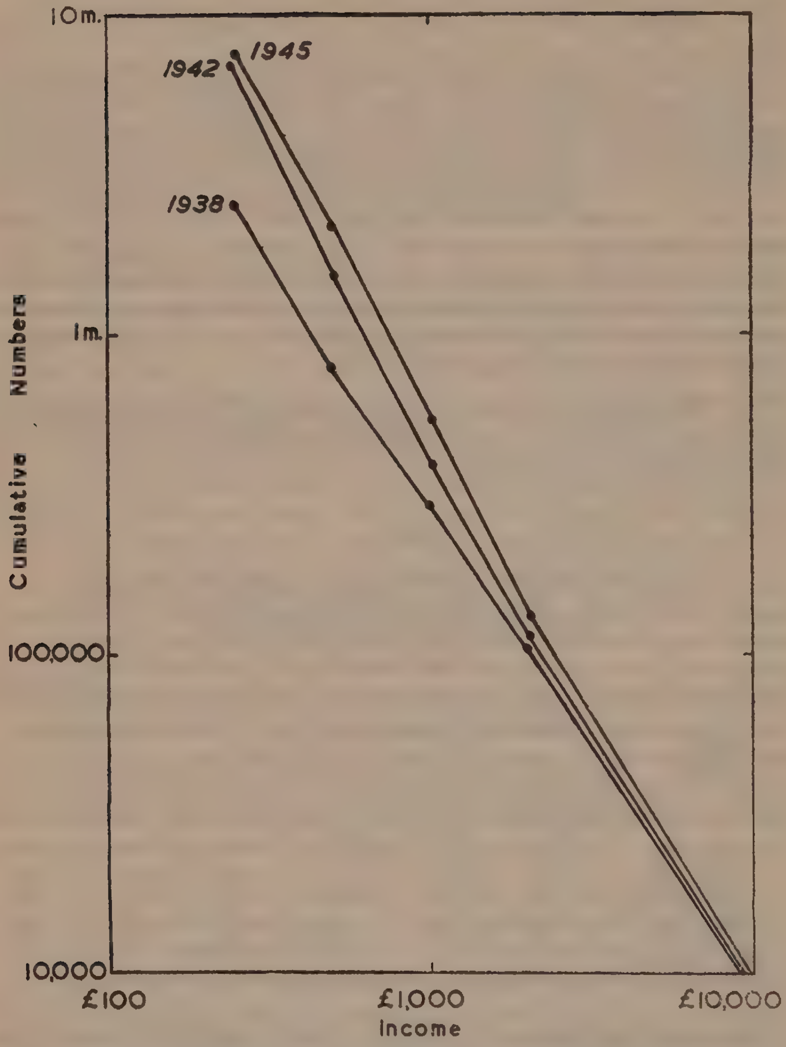


FIG. 2. Cumulative Distribution of Incomes for the years 1938, 1942 and 1945, as given in the Annual White Papers on the National Income and Expenditure.

24. The course to be followed will be to attempt to devise a distribution, independently of the distributions given in the White Papers, which fits whatever actual facts are known. The year chosen will be 1944–45 and the income taken will be the income *of* that year irrespective of the year in which it would come under assessment to tax. The only definite ascertained facts which are available are (1) the amount of income within the field of assessment to tax; (2) the number of individuals above the exemption limit (this figure is partly

estimated); and (3) the yield of income tax. 1944–45 is the latest year in respect of the income of which these facts have been published. Before attempting to construct the distribution, it is proposed to re-examine Pareto's Law to see whether *ex hypothesi* it is likely to fit the circumstances of a present-day community. The conclusion which will be reached is that it is *not* and a modification of the Law will be proposed which *ex hypothesi* would appear to fit the facts. It will be this modified Law which will be applied to the facts of 1944–45.

25. One objection which is sometimes raised to Pareto's Law is that a logarithmic distribution is infinite, and consequently that it assumes an infinite number of people with infinitely small incomes and an infinitely small number of people with infinitely large incomes. This is not an objection of much substance. It is very rarely the case that natural distributions are regular at the extremities. In the last resort human beings are indivisible and this alone must limit the precise application of a mathematical function to human attributes. An objection of more substance is that Pareto's Law produces wholly excessive numbers at a comparatively high income level—say £50 or £100. This indeed gives the clue to the first real defect in Pareto's Law. The total population is not only physically limited in the sense that there are about 50m. individuals in the United Kingdom and no more, but the *income earning* population is limited by social conventions at a much lower figure. The effect of compulsory education, the social tradition that a woman's place is in the home, the convention that a man retires at 60 or 65 and numerous other factors, all limit the income earning population to an artificially low figure. It was in fact discovered during the war that the absolute maximum to the employable population was rather less than 25 m., i.e., less than half the total population. These considerations apply, of course, only to earned income but earned income is the major constituent of total income.

26. Not only are numbers conventionally limited in this way, but perhaps even more importantly, there is a conventional lower limit to earnings. There is admittedly a fairly wide dispersion of earnings about the average but it is extremely unlikely that in 1944, the year now under investigation, many adult males earned less than the agricultural worker's minimum wage of 60/– a week. Below the men, admittedly, there are the women, the boys and the girls, but in July, 1944, the average earnings of women were 64/3 a week, of boys 47/4 and of girls 34/11. Even in the middle of the war, adult men formed nearly two-thirds of the working population, and even if the Armed Forces were excluded, over one-half. Boys and girls comprised a comparatively small proportion of the total. While earnings may be distributed fairly regularly down to the effective minimum wage point for men, and possibly for women also, at some

point there is almost certainly a break in the distribution, and this break may, in present circumstances, be as high as £2 10s. 0d. or £3 a week. Below the break point, people are probably clustered together in isolated patches: possibly a patch of juveniles around the £100 to £120 mark; a large patch of service personnel (in 1944) in the £50 to £75 class; old age pensioners at various points above £26 a year and so on. It is extremely doubtful whether below the break point there is any regular distribution at all. Unearned income may provide a small substratum of regular distribution but the number of people with unearned incomes in the lower income groups is small.

27. Both these limitations, namely the conventional limitation in numbers and conventional minimum earnings, point in the same direction, namely a sharp break in the distribution at a comparatively high figure. The result is a distribution which appears to have been cut off abruptly at this particular point. *The theory which is put forward and which it is proposed to test is that the distribution of incomes is in fact logarithmic but that the distribution is cut off at a point which at the moment is probably between £2 10s. 0d. and £3 0s. 0d. a week. Below this point there is no regular distribution at all.* It must be stressed that the theory which is being put forward is not that the incomes above a particular point are distributed in one way and the incomes below in another. The theory is that the "natural" distribution is logarithmic throughout its entire length but that because of sociological factors the actual distribution is cut off or truncated at some point and that below this point there is no regular distribution at all.

It may be said at once that if, as at the moment, we are only concerned with incomes above the income tax exemption limit, which in 1944–45 was £110, this absence of regular distribution at the bottom will not cause real difficulty. If the number of people above the exemption limit is known and the number above the cut-off point can be calculated, the number in the field of irregular distribution is simply the difference and their average income must lie somewhere between £110 and the cut-off point. Both their numbers and total income are therefore capable of fairly accurate determination.

28. In order to test this theory by reference to the facts of 1944–45 it will be necessary first to compute the income of that year above the income tax exemption limit. This then will be the income figure which the distribution, if it is sound, must also produce. The distribution itself will be constructed by computing from the published information a Surtax distribution of the incomes of 1944–45 and projecting this backwards. The resulting distribution will be cut off at some point between £125 and £150.

29. The Income figures published in the Annual White Paper on the National Income and Expenditure do not divide total income at the £110 point and consequently they cannot be used for the present

purpose. It will be necessary, therefore, to work on the data published in the Inland Revenue Reports. It should be borne in mind that what is required is the income of 1944–45, i.e., the income arising in that year and not the income assessed to tax in that year. At present profits are assessed, generally, on the previous year basis and other income, of which the principal item is wages and salaries, on the current year basis. In a period of rapidly changing income levels it is essential that all the income figures should relate to the same period. In computing the income of the year 1944–45 it is necessary, therefore, to take the profits assessed in 1945–46 and the other items of income assessed in 1944–45.

30. The following figures are extracted from the 89th Inland Revenue Report (Cmd. 7067 of 1947):

INCOME OF THE YEAR 1944–45

Schedule A (Land and Houses)	£m. 349
Schedule B (Small farmers)	41
Schedule C (Government Interest)	194
Schedule D (Trading Profits)	1,600
P.A.Y.E. (Wages and Salaries)	3,983
TOTAL	£m. 6,167

This total requires some adjustment for the pay of the Armed Forces which in 1944–45 did not come under P.A.Y.E.; for the fact that P.A.Y.E. does cover some individuals below the exemption limit; and for numerous other factors. These are dealt with in detail below.

(1) *Pay of the Armed Forces*

Little direct information is available regarding the pay of the Forces above the Income Tax exemption limit but it is possible to make some estimate from the various White Papers issued in recent years on the Pay of the Forces. Thus from Cmd. 6750 of 1946 on the Post-War Pay Code for Officers, and Cmd. 6715 of 1945 on the Post-War Pay Code for Other Ranks, it is possible to calculate that, pre-war, officers comprised about 1 in 18 of the total strength. Applying this fraction to the total of just over 5 m. in the Forces in 1944–45, gives a figure of 270,000 officers. The average pay of an officer at the rates in force at the end of the war is given by Cmd. 6750 as approximately £590. £53 of this consisted of War Service Increments which were only introduced in the latter half of 1944–45. Bearing in mind also that the average War Service Increment in 1944–45 would be less in 1944 than in 1946 because most people would have had shorter service in the former year, it would not be unreasonable to take the average pay for 1944 as £550. This figure includes marriage allowance which is not taxable. Deducting an average of, say, £75 for this leaves £475. Total officers' pay, all of which would be in the income tax field, would therefore have been about £m. 128. It is now necessary to add the pay of other ranks whose total pay might have exceeded £110 a year. In 1944 the only people in this category would have been Sergeants and above and possibly a few tradesmen drawing special rates of pay. It was stated in the House on one occasion that one person in five in the Forces was of or above the rank of lance-corporal (paid), i.e., about 1 m. persons in 1944. Deducting officers from this figure would leave about 700,000 other ranks of or above the rank of lance-corporal. At a guess not more than about half—say 400,000 at the outside—would be Sergeants or above or others in receipt of pay of £110 per annum or more. In 1944 a Sergeant received about £130 per annum plus a small amount for War Service Increment. Taking an average rate of pay of £140 would give a total figure of £m. 56. If this is added to the £m. 128, it gives a total Forces pay of £m. 184 for 1944–45. Something must be added for the Service pay of soldiers whose pay was less than £110 but whose total income was more, but it will probably be sufficient to round the £m. 184 up to £m. 190 to account for this.

(2) *Income assessable under Sch. E but not within the scope of P.A.Y.E.*

Not all Schedule E income was transferred to P.A.Y.E. in 1944. No information is available regarding the amount not so transferred but it must have been small. A nominal figure of £m. 10 is assumed.

(3) *Individuals in P.A.Y.E. but exempt from tax*

For 1944–45 an individual had to be brought within P.A.Y.E. if his earnings exceeded £2 a week. It is necessary therefore to exclude from the P.A.Y.E. figure the income of those earning between £104 and £110 p.a. A figure of £m. 25 will be taken. This figure is really derived from the ultimate distribution which will be obtained but this small degree of circularity in the calculations will not lead to any serious error.

An individual was also brought within P.A.Y.E. *if at any time in the year* his pay exceeded £2 a week. This might bring into P.A.Y.E. people whose income was less than £104 for the year: e.g., cases of fluctuating earnings, or where the individual retires part way through the year. A figure of £m. 25 is assumed for this, but this is little more than a guess.

These two items account, therefore, for £m. 50.

(4) *Allowable expenses given in the P.A.Y.E. Coding*

Expenses are really a deduction against income but, as a matter of administrative convenience, for P.A.Y.E. purposes they are treated as an allowance and covered by the Code Number. The total pay figure, therefore, is before deducting allowable expenses. About half of the 16 m. people under P.A.Y.E. are manual workers, the great majority of whom are entitled to allowances for tools, clothing, etc., usually given on a flat rate basis and ranging from a few pounds a year to £13 or more. Non-manual workers normally receive little in the way of ordinary expenses allowances except in special cases, but superannuation contributions are treated on the same basis as expenses. Probably a substantial proportion of non-manual workers are covered by superannuation schemes and a not uncommon rate of contribution is 5 per cent. The amount allowable as an expense may, therefore, be considerable.

Taking all classes of people under P.A.Y.E., an average deduction per head of £5 would almost certainly be too low: £10 probably too high. A midway figure is assumed giving a total for allowable expenses of £m. 120.

31. Total income adjusted for these factors will be as follows:—

Original Total		£m. 6,167
Add:	£m.	
Forces	190	
Miscellaneous	10	
		200
		6,367
Deduct:	£m.	
Individuals under P.A.Y.E. but exempt ..	50	
Expenses	120	
		170
Adjusted Income		£m. 6,197

32. The next step is to exclude non-personal income. Estimates of the various items are given below. The first item is computed from the information given in the 1947 National Income White Paper (Cmd. 7099 of 1947) and consists of the sum of the items 33, 34 and 35 in Table 16 adjusted to a financial year basis.

Company Reserves, etc.	£m. 382
Life Insurance Funds	75
Miscellaneous, including the profits of Local Authorities after deducting interest paid	20
Non-Residents	45
Total Non-Personal Income	£m. 522

If this is deducted from the £m. 6,197 total income, it leaves a figure of £m. 5,675 as total personal income above the exemption limit of £110.

33. It is now necessary to construct a distribution of incomes over £2,000 (i.e., the Surtax incomes) arising in 1944–45. As this will

be the distribution which will be projected backwards to obtain the complete distribution, it is necessary to exercise great care in its construction as a comparatively small error may be greatly magnified when the line is projected backwards.

The income of 1944–45 would be assessable to Surtax for 1945–46 in so far as it consists of profits and for 1944–45 in other cases. In the Surtax sphere profits (including company dividends) are the predominant item particularly if it is borne in mind that Sch. A is virtually static. What is required, therefore, is a distribution which lies between that for the 1944–45 assessments and that for the 1945–46 assessments and inclining nearer the latter than the former.

34. A distribution for the year 1944–45 is given in the 89th Inland Revenue Report. This distribution is not complete as assessments may be made at any time within six years of the end of the year of assessment and a perusal of earlier Reports will show a considerable increase in the number of assessments for any particular year as time goes on. Past experience would indicate that, by the time assessing is complete, assessments for 1944–45, given as 125,001 in the 89th Report, should ultimately reach about 136,000, and assessments for the following year about 142,000. A figure of 140,000 in respect of the income arising in 1944–45 would not be unreasonable. No distribution of incomes assessed for 1945–46 is yet available, and the 140,000 can, therefore, only be distributed in the same way as the 125,001 for 1944–45. Table 4 shows the original distribution for 1944–45 as given in the 89th Report and these figures increased *pro rata* to produce a total of 140,000. The resulting cumulative distribution is plotted in Figure 3 on a double log scale.

TABLE 4.

INCOMES OVER £2,000.

INCOMES ASSESSED FOR 1944–45 AND PROVISIONAL DISTRIBUTION OF INCOMES ARISING IN THE YEAR 1944–45.

Income Range	*Number of Incomes in the Range*		*Cumulative Frequency*	
	Assessed for 1944–45	Arising in 1944–45	Assessed for 1944–45	Arising in 1944–45
£2,000– 2,500	35,148	39,365	125,001	140,000
2,500– 3,000	23,809	26,666	89,853	100,635
3,000– 4,000	25,519	28,581	66,044	73,969
4,000– 5,000	12,920	14,470	40,525	45,388
5,000– 6,000	7,646	8,564	27,605	30,918
6,000– 8,000	8,279	9,272	19,959	22,354
8,000–10,000	4,117	4,611	11,680	13,082
10,000–15,000	4,289	4,804	7,563	8,471
15,000–20,000	1,559	1,746	3,274	3,667
20,000–25,000	657	736	1,715	1,921
Over £25,000	1,058	1,185	1,058	1,185

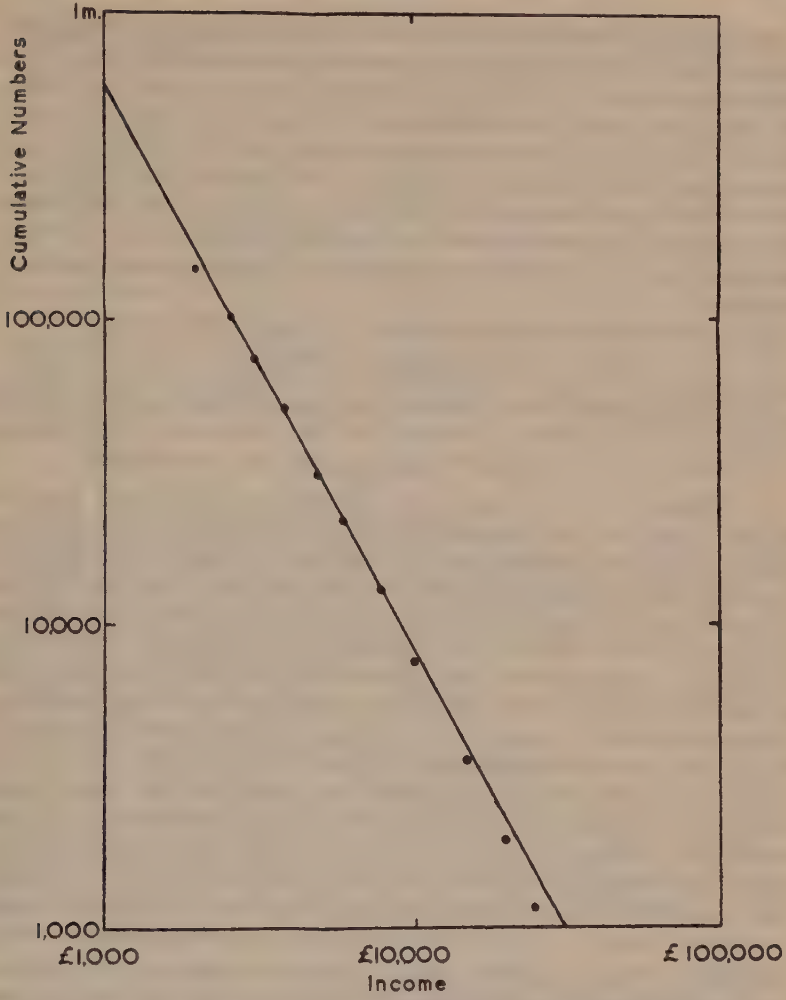


Fig. 3. Cumulative Frequency of Incomes above £2,000 arising in the year 1944–45.

The points between £2,500 and £8,000 lie very close to a straight line (on the double log scale) but there is a considerable deficiency at the £2,000 point. A straight line joining the other points would give a figure of about 150,000 at £2,000 compared with the estimate of 140,000. Part of this may be due to the normal deficiency at the £2,000 point: part may be due to the fact that the original numbers were increased *pro rata* while experience suggests that the additional assessments are weighted more heavily at the bottom. These factors would not, however, account for the whole difference. There is, in fact, another explanation for this difference which will be given later.

Meantime it is proposed to draw the line through the actual distribution, as estimated, at the £8,000 point (13,082) and through 147,500 at the £2,000 point. As is apparent from Figure 3 this line, if anything, lies somewhat below the distribution as suggested by the Surtax figures. When projected it will therefore give a figure for total income and total numbers which err, if anything, on the small side. This is deliberate for it is desired to avoid any suggestion that the line has been pitched on the high side in order to produce an income which will in fact correspond with the figure previously computed.

The formula for the line so drawn is approximately:

$$N = 86585\, x^{-1.74753}$$

This distribution is excessive in the case of incomes above £8,000 and it will be necessary in making the final estimates to adjust for this excess as was done in the case of the 1937 distribution.

35. There is a very important adjustment which must now be made. What we are interested in is income *before* tax. In some respects, however, the incomes as assessed to Surtax are incomes *after* tax, because both E.P.T. and N.D.C. are deductible from profits in arriving at the figures to be assessed for income tax (and Surtax) purposes. E.P.T. and N.D.C. payable on a Company's profits may or may not be reflected in the dividends but in any event dividends are distributed throughout the income range and this is not, therefore, a factor which affects one part of the income range more than another. In the case of individuals and partners, however, the E.P.T. and N.D.C. is a direct deduction against the profits and *all* these people would be in the Surtax range. The " working proprietor " standard for E.P.T. for 1944–45 was £2,500, which meant that after deducting E.P.T. the working proprietor would be left with £2,500. Where there was more than one working proprietor the standard per head was slightly less but relatively this type of case is unimportant. The exemption limit for N.D.C. was £2,000 but, owing to the operation of the remuneration provisions, no N.D.C. would be paid by an individual or partnership unless the profits exceeded £3,500. In these circumstances the E.P.T. and N.D.C. ought to be " added back " in order to arrive at the true " pre-tax " income and they should be regarded as falling in the over £2,500 income range.

There is a further point. The distribution so far obtained was obtained by increasing the Surtax figures for 1944–45. The profits assessed to Surtax for that year were the profits of 1943–44. For 1943–44 the E.P.T. working proprietor standard was £1,500. An individual who was liable to E.P.T. in that year and entitled only to the working proprietor standard would have had his income reduced by E.P.T. to £1,500, so that unless he had substantial other income he would not have appeared in the Surtax figures for 1944–45 at all. The increase in the standard to £2,500 in respect of the *income* of

1944–45 would, however, bring him into the Surtax figures for subsequent years but in any event as we are looking at income *before* tax he must be included. It will be necessary, therefore, to add back not only the E.P.T. (and N.D.C.) paid by individuals and firms on profits made in 1944–45 but also their net income after E.P.T. Some clue to the amount of E.P.T. and N.D.C. paid by individuals and partners can be obtained from the figures published in connection with the various increases in the E.P.T. standards: the amount paid on the profits of 1944–45 was probably in the region of £m. 30. If the net income after payment of E.P.T. and N.D.C. is taken as £m. 20 this gives a total of £m. 50 to be added back above the £2,500 mark. If this additional income is assumed to be distributed proportionately above £2,500 it will produce a new distribution curve of the same slope as the original curve but slightly above it. The formula for this new curve is:

$$N = 94002\, x^{-1.74753}$$

This curve gives total numbers above £2,500 as 108,400 compared with 99,800 given by the original curve. The number of E.P.T. payers brought in, therefore, is 8,600, and their net income after E.P.T. at £2,500 a head would be £m. 21 and not £20 as assumed above. The £m. 50 will therefore be assumed to be divided into £m. 29 E.P.T. and N.D.C. (instead of £m. 30) and £21 net income. Unless this trifling adjustment is made, it will result in minor inconsistencies in the final distribution.

The new curve will also increase numbers between £2,000 and £2,500, thus resulting in a substantially higher figure at the £2,000 point than was originally taken. This further increase represents the people who were liable to E.P.T. on the profits of 1943–44 because these profits exceeded £1,500 but were not liable on the profits of 1944–45 because these profits did not exceed £2,500 and who were not, therefore, brought in by the earlier adjustment.

36. The new line will now be projected backwards to obtain the distribution in the lower income ranges and then truncated at some point below £150. As what is finally required is a distribution of “ income tax incomes ”, it will be necessary in arriving at the final distribution to deduct the E.P.T. which was added back above the £2,500 point. The final distribution will then consist of three sections:

(1) The distribution above £2,500 given by the original formula.

(2) The distribution below £2,500 given by the second formula.

(3) The “ cut-off ” below some point below £150.

In addition, as before, the actual numbers and income above £8,000 will be taken and not the income and numbers as given by the formula.

37. As a first trial the cut-off will be taken at £135. Numbers and income as given by the second of the two formulæ are:

Numbers above £135	17,795,000
Income above £135	£m. 5,616

The income figure has to be adjusted by:

(1) Adding the income of those between £110 and £135.

(2) Deducting the £m. 29 E.P.T. and N.D.C. on individuals and partners.

(3) Deducting the amount by which the actual income above £8,000 falls short of the formula income (the formula income *after* deducting the E.P.T., i.e., the income given by the first formula).

(1) The 89th Inland Revenue Report gives total numbers above £110 as 18½m. for 1944–45 and 18¾m. for 1945–46. Taking a figure midway between these, viz. 18,625,000, leaves 830,000 in the income band £110 to £135. Assuming their average income to be £120, their total income would be £m. 100.

(2) This is a simple deduction of the £m. 29 previously added back.

(3) The first formula gives income above £8,000 as £m. 245. The corresponding figure as given by the original distribution (i.e., the one with the total of 140,000 above £2,000) is £m. 201, a difference of £m. 44.

The final formula income therefore is as follows:—

Total income above £135		£m. 5,616
Add Incomes between £110 and £135		100
		5,716
Deduct :		
E.P.T. and N.D.C. on individuals and partners	£m. 29	
Excess in respect of incomes over £8,000 ..	44	
		73
Adjusted Total Income		£m. 5,643

This corresponds very closely with the total income figure of £m. 5,675 computed in para. 32. The discrepancy of £m. 32 is only one half of one per cent. and well within the margin of error likely to be expected with estimates of this character.

The resulting distribution is shown in Figure 4. The numbers of individuals and income in ranges as given by the distribution are shown in Table 5. It should be remembered that while the general run of the distribution is accurate, the actual distribution may be expected to diverge somewhat at particular points, e.g., at the £2,000 point where the actual distribution always falls short of the theoretical distribution.

TABLE 5.

FINAL DISTRIBUTION OF INCOMES ARISING IN THE YEAR 1944–45.

Income Range	*Numbers in Range*	*Cumulative Frequency*	*Income in Range*	*Cumulative Income*
£110– 135	830,000	18,625,000	£m 100	£m 5,643
135– 200	8,841,000	17,795,000	1,430	5,543
200– 300	4,545,000	8,954,000	1,094	4,113
300– 400	1,742,000	4,409,000	598	3,019
400– 500	861,000	2,667,000	384	2,421
500– 600	493,000	1,806,000	268	2,037
600– 700	310,000	1,313,000	201	1,769
700– 800	209,000	1,003,000	156	1,568
800– 900	148,000	794,000	125	1,412
900– 1,000	108,000	646,000	103	1,287
1,000– 1,500	273,000	538,000	329	1,184
1,500– 2,000	105,000	265,000	179	855
2,000– 2,500	52,000	160,000	115	696
2,500– 3,000	35,400	108,000	96	561
3,000– 4,000	28,700	72,600	98	465
4,000– 5,000	14,200	43,900	63	367
5,000– 6,000	8,100	29,700	45	304
6,000– 8,000	8,500	21,600	58	259
8,000–10,000	4,600	13,100	41	201
10,000–15,000	4,800	8,500	58	160
15,000–20,000	1,800	3,700	30	102
20,000–25,000	700	1,900	16	72
Over £25,000	1,200	1,200	56	56
TOTAL	18,625,000	—	£m 5,643	—

The computation of income and numbers above the cut-off point is complicated by the fact that the distribution is represented by two curves and not one. The actual procedure adopted was as follows:

Numbers

The charge of E.P.T. and N.D.C. on trading incomes above £2,500 does not take anybody out of the distribution altogether, but merely shifts a number of people down the income scale, piling them up against the £2,500 point. Cumulative numbers below the £2,500 point are not affected. The correct cumulative totals can therefore be obtained by using the formula for the higher of the two curves up to and including £2,500 and the formula for the lower curve above £2,500. The numbers in each range were then found by difference. This gives a comparatively large number of people in the £2,500 to £3,000 range as the total at the first point was computed from the higher curve and the total at the second point from the lower curve. This is correct, the large number of people in this range representing those who were pushed down the income scale by the E.P.T. In the case of individuals above the £8,000 point, where the actual distribu-

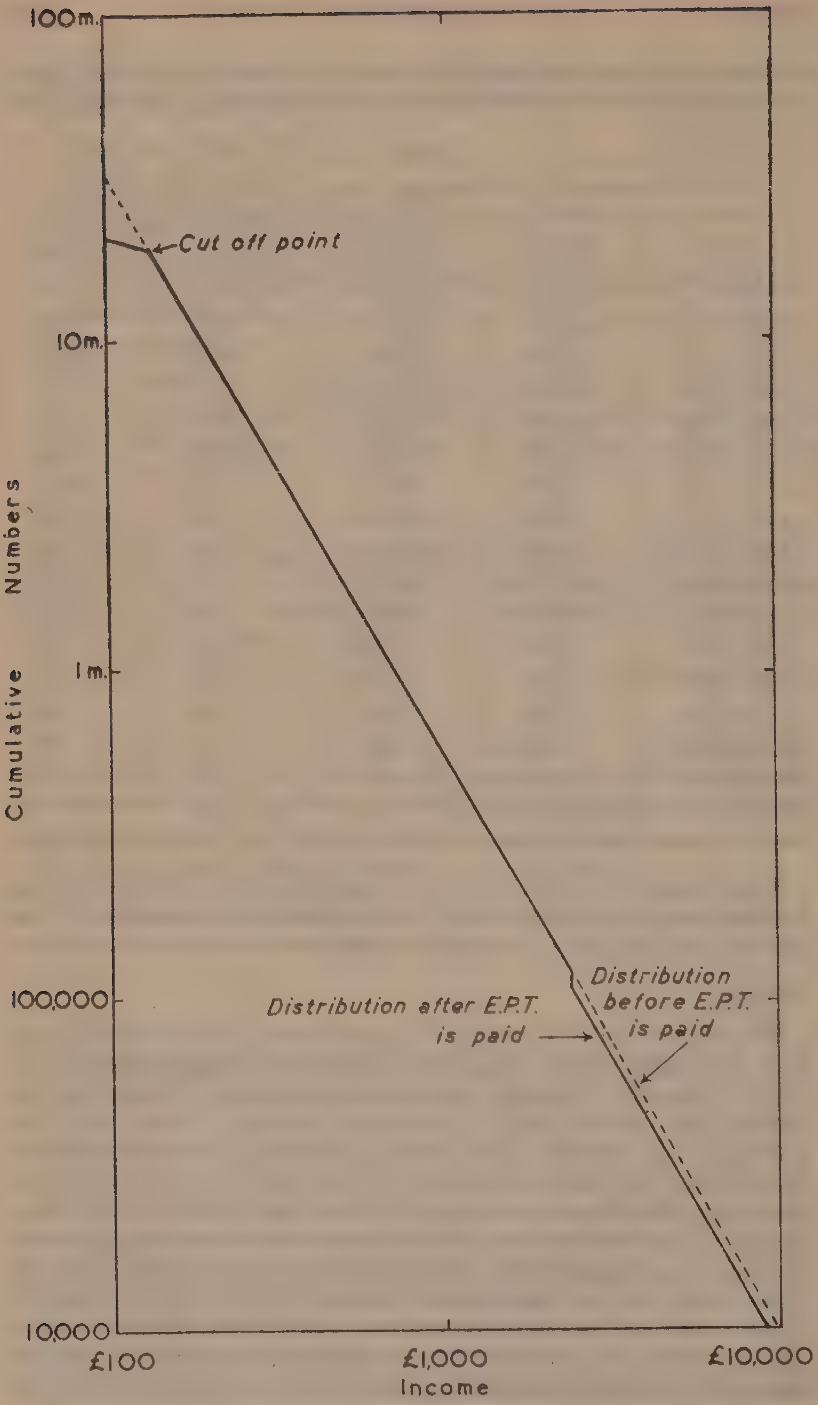


FIG. 4. Final Cumulative Distribution of Incomes arising in the year 1944–45.

tion falls short of the theoretical distribution, actual numbers were taken in the same way as actual income was taken in the income computations. In constructing the original curve, the cumulative frequency at the £8,000 point was taken as equal to the actual frequency and consequently numbers below the £8,000 point will not be affected, the result of the deficiency above the £8,000 point merely being to shift some individuals down the income scale and leave them piled up against the £8,000 point.

Income

The position here is different. Cumulative income is not calculated directly from the income distribution but from a formula derived from the income distribution. This formula was obtained by multiplying the frequency at a given income point by that income and integrating the result for all incomes between that point and infinity. If this derived formula were used to calculate cumulative income at any point below £2,500, it would give a figure corresponding to a distribution represented by the higher curve for *all* income levels. It was necessary, therefore, to deduct from the cumulative income figures thus obtained, for income levels up to and including £2,500, both the E.P.T. of £m. 29 and the deficiency of £m. 44. Between £2,500 and £8,000, the cumulative income was obtained from the lower curve, the £m. 44 deficiency then being deducted, and above £8,000 the actual income was taken.

38. Before this distribution is accepted, there are one or two points which remain to be considered.

Firstly, is it possible to improve on the cut-off point at £135 ? The lower this point is taken the better, and if £135 gives a reasonable result, as it does, there is little point in taking a higher figure. The effect on total income would, in any event, be trivial. If a lower figure than £135 is taken, the numbers between £135 and the income tax exemption figure of £110 are unduly reduced. If the cut-off is taken as £130, the formula gives total numbers above £130 as 19 m., which is more than the total number above £110. If, therefore, the number above £110, taken as 18,625,000, is correct, it is unlikely that we can improve on the figure of £135 for the cut-off.

Secondly, the formula distribution gives a total of 160,000 people above the £2,000 point compared with the 140,000 originally obtained by the *pro-rata* increase in the published figures for 1944–45. Part of this difference, about 5,000, represents the normal excess of the theoretical distribution over the actual distribution at the £2,000 point. This reduces the number over £2,000 to 155,000 and the excess to 15,000. Of this 15,000 it was calculated in paragraph 35 that 8,600 represented the people paying E.P.T. on the profits of 1944–45, when the standard was £2,500, but who did not appear in the Surtax distribution for 1944–45 at all because their profits for 1943–44 were reduced by E.P.T. to £1,500. This leaves 6,400 as the number of people, also referred to in paragraph 35, whose profits exceeded £2,000 but who paid no E.P.T. for 1944–45 because their profits were less than £2,500 and who also did not appear in the Surtax distribution for 1944–45 because their profits for 1943–44 were reduced to £1,500 by E.P.T. This 6,400 is not an unreasonable figure. The increase in the 140,000 to 160,000 may, therefore, be regarded as adequately accounted for. It may now also be said that it is clearly the E.P.T. which was responsible for the " considerable deficiency at the £2,000 point " displayed by the original distribution to which attention was drawn at the end of para. 34. It will, of course, be some years before the 160,000 (or rather the 155,000) is reflected in the published figures in view of the time lag in the assessment of Surtax.

Thirdly, has due regard been paid to the incidence of E.P.T. and N.D.C. on companies ? When this point was first raised, it was dismissed on the ground that even if the E.P.T. and N.D.C. were reflected in the dividends, the dividends were distributed throughout the income range and not confined, as was the case with E.P.T. and N.D.C. on individuals and partners, to the Surtax sphere. This is really only half the answer. Proportionately, company dividends are distributed more heavily in the upper income ranges than in the lower. If, therefore, the Surtax distribution were adjusted to take account of the E.P.T. and N.D.C. so far as reflected in dividends, the ultimate effect when the Surtax distribution was projected backward would have been to increase total income by a greater amount than the E.P.T. and N.D.C. included. Had this been done it would therefore have reduced or eliminated the ultimate gap between the actual and the formula income.

None of these three points provides any ground therefore for doubting the validity of the fit between the actual income and the formula income : the third point, if anything, suggests that the fit is even closer than apparent.

39. It would, of course, be possible, if desired, to fit a distribution of the kind described precisely to the personal income figure of £m. 5,675 computed in paragraph 32. The resulting distribution would lie fractionally above that already computed and it would be necessary in order to preserve total numbers at 18,625,000 to move the cut-off point up slightly. The increase in numbers in the Surtax sphere would be trifling and well within the possible margin of error in the original figures, particularly if it is borne in mind that, as stated in para. 34, the original Surtax line was drawn on the " thin " side. The resulting distribution would differ only insignificantly from that given in Table 5. The writer's own view, however, is that, if the original *total* income figure is right, it is more likely that it is the *impersonal* income which has been understated, and that the *personal* income, and, therefore, the distribution given in Table 5, is correct. The matter is one of little importance as, relatively speaking, the amounts involved are trivial.

40. It is now possible to sum up the results of this enquiry. Firstly, it has been demonstrated fairly conclusively that in 1937 the distribution of incomes was logarithmic, at least above the £200 point which was taken as the lower limit of the Census enquiry.

Secondly, it has been shown that, on the assumption that the distribution of incomes is truncated by sociological factors at some point round about £135, or just over £2 10s. 0d. a week, the distribution of incomes above that point *can* be described by a logarithmic curve.

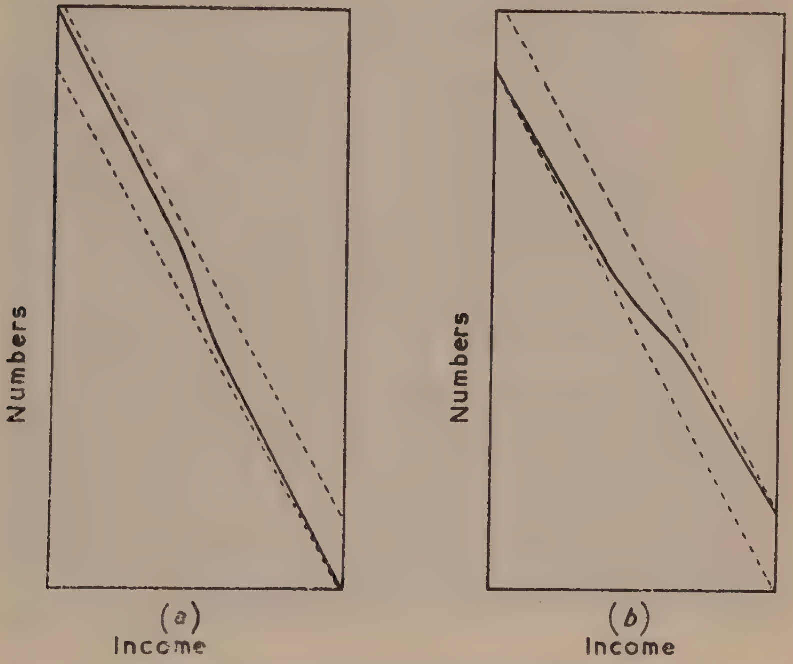


Fig. 5. Distribution of Incomes as assessed for a particular year: (*a*) when National Income is rising; (*b*) when National Income is falling.

There are two further points to be made. Firstly, in 1937 the cut-off would have occurred probably at some point between £50 and £75 and therefore would have lain far below the starting point of the Census. Secondly, that while the fact that a distribution of the kind described *can* be constructed for 1944–45, it does not necessarily follow that the distribution in that year *did* conform to the pattern described. But the distribution does fit the only facts really known, viz., the total amount of incomes over £110, the number of incomes over £110 and the distribution in the Surtax ranges. It also produces, although for reasons of space this will not be demonstrated, the correct yield of income tax, a check of some importance.

Moreover, this distribution involves no assumption that the *nature* of the income distribution has changed since 1937, a factor strongly in its favour. These considerations at least raise a very strong *prima facie* case that the theory put forward is correct.

41. In conclusion a word might be said on " hybrid distributions ". The greatest care was taken in compiling the distribution for 1944–45 to ensure that the income figures related to the same period. If the figures of income assessed to tax for a particular year are taken the result may be to distort the distribution, because part of the income will be the current year's income and part the previous year's. In 1937 this did not matter a great deal, as the only item of much importance which was assessed on the current year basis was wages and these mainly fell below the Census starting point of £200. To-day, however, both wages and salaries are assessed on the current year basis while profits continue to be assessed on the preceding year basis. In a period in which the level of income is changing considerably, the distorting effect of taking incomes as assessed to tax for a particular period may be considerable. Generally speaking, profits are distributed more heavily in the upper ranges of income, wages and salaries in the lower income ranges. If income is rising, the wages and salaries assessed for a particular year will be a year ahead of the profits. The result will be to bulge the distribution at the lower income end, where wages and salaries are mostly to be found, and to produce a corresponding dent at the upper end, where the distribution line turns down to meet the lower profit line. If income is falling, the dent will be at the lower income end, the bulge at the upper income end. Figure 5 shows the approximate shape of these distributions. It is not proposed to develop this point at the moment ; it is mentioned because it may provide an explanation of the non-linear shape assumed by some income distributions which have been produced in the past.

A Reconsideration of the Theory of Effective Demand

By T. Wilson

The American Economic Association is performing a useful function in selecting leading articles on economic theory for publication in book form by the Blakiston Company. These volumes are likely to be most convenient for those who are attempting, after the long interval of the war, to refresh their memory with regard to pre-war discussions without embarking on a tedious search through old periodicals. Much depends, of course, upon the choice of articles and there are some unfortunate omissions from the present volume.[1] In particular the writings of Mr. Hicks have been neglected and the later Keynesians, such as Mr. Kaldor and Mr. Kalecki, are not represented.[2] Agreement as to the best selection may be regarded, however, as unattainable and it need scarcely be said, in view of the membership of the selection committee, that the choice has on the whole been most judicious. Furthermore, the long bibliography at the end is of considerable value in itself.

Clearly it is impossible to review a book of this sort but after reflecting upon its contents it may be appropriate to take up one of the topics discussed, and try to examine the position reached. The most suitable for this treatment appears to be the basic problem of variations in the supply of purchasing power. How is it possible for aggregate expenditure to expand and contract in response to variations in investment demand? What determines the rate of interest, and why does the pricing system prove impotent by itself to prevent fluctuations in total outlay?

II

Before the publication of Keynes' *General Theory*, the discussion of effective demand was closely linked with the study of credit institutions and, viewed in retrospect, it seems unfortunate that his new work, which set the tone for many subsequent contributions, should have been couched in such abstract terms. There is, surely, reason to regret his abrupt departure from the path which he had begun to follow in *A Treatise on Money*—in particular the brilliant, and now much neglected, second volume. The new Keynesian concepts, on the contrary, were more difficult to relate to the study of monetary institutions, the rate of interest became a somewhat obscure concept, and the crucial role of the banks was much concealed. More recently there has been some reaction in favour of a more institutional approach with two natural, if opposing, results. On the one hand, much of the theory of the late 'thirties appears to be unduly obscure, and less novel than its authors seem to have supposed; on the other hand, it does not take sufficient account of the complexities of real life.

---

[1] *Readings in Business Cycle Theory*, The Blakiston Company, Philadelphia, 1944. Price $3.75.

[2] Some of the omissions have been made good in a later volume, *Readings in the Theory of Income Distribution*, *1946*. Price $4.25.

The most convenient method of approach is to trace the consequences of an increase or decrease in the demand for loanable funds by the business world. As a first approximation, a very straightforward account can be given. If the additional funds can only be obtained from a concomitant increase in savings, and if nothing has occurred to change people's attitude towards thrift, the rate of interest will presumably rise and act as an equilibrating force.[1] In fact, however, the new expenditure can be financed in a number of other familiar ways which will change the aggregate volume of monetary outlay.

(*a*) Existing deposits held by business on current account may be used more rapidly and are, in fact, so used during the upswing of the trade cycle. Funds on deposit account may also be called into service by their owners.

(*b*) The banks may grant additional loans by creating new money.

(*c*) Reserves of short-term bills may be sold, or new bills issued, without any discouraging rise in discount rates so long as the banks are prepared to step into the breach with new money.

(*d*) Long-term securities may be sold or new securities issued and it is this method of obtaining funds which has attracted most attention in the recent literature. For the moment it is sufficient to note that if the long-term market were completely isolated from the banks and the money market, a sharp fall in security prices would follow. Since in fact it is not so isolated, easy conditions in the short-term market are likely to result in an elastic supply of long-term funds. Thus, the theories of liquidity preference and speculation may be regarded as simply an attempt to chart the somewhat more complicated route which funds will follow when they are sought in the market for securities.

It will be recalled that, in his essay on "Mr. Keynes and the Rate of Interest", Professor Robertson includes savings in his list of the sources from which funds may be derived.[2] Savings have been omitted above solely because I wish to investigate the consequences of an increase in investment demand unaccompanied by any change in thriftiness. Of course, if at the same time people decide to make greater provision for the future, savings must be added to the list. There will then be a smaller rise in MV and a smaller consequential rise in incomes. The extent to which the rates of interest will be lower if savings are also increased is, however, more difficult to predict. They will not in fact be any lower at all if the supply of funds from other sources is perfectly elastic. This assumption seems to underlie those parts of the Keynesian theory where it is argued that increased savings will not alter the rate of interest, although it cannot be squared with the other passages in which it is claimed that greater thrift, by lowering the level of income and therefore the demand for working balances, may lead indirectly to a lowering of the rate of interest.

---

[1] The terms "savings" and "investment" will be employed in the *ex ante* sense throughout. In the writer's opinion, the *ex post* definitions have been responsible for much of the confusion in this field of inquiry. Cf., e.g., three articles reprinted in "Readings in Business Cycle Theory": Ohlin, "The Stockholm Theory of Savings and Investment"; Lutz, "The Outcome of the Savings-Investment Discussion"; and Lerner, "Definitions, Assumptions, Objections".

[2] *Essays on Monetary Theory*, 1940, Chapter 1.

III

The next step is to develop further the arguments implicit in (*d*) above, and Lord Keynes' analysis in the *General Theory* may serve as a convenient starting-point. "The novelty of my treatment of saving and investment consists", he writes, "not in my maintaining their necessary aggregate equality but in the proposition that it is not the rate of interest, but the level of income which (in conjunction with certain other factors) ensures their equality."[1] No one to-day is likely to challenge the truth of this statement or to underestimate its importance, but it does not follow that Keynes has provided an entirely satisfactory explanation of the failure of the rate of interest to perform its old, theoretical function. The trouble arises, in his view, because the rate is determined, not by the demand for loans and the supply of loans from savers, but by liquidity preference and the amount of money. Now if the term "liquidity preference" is used in its widest sense to include *all* demands for money and if "the rate of interest" means a general complex of rates (as Keynes intended), this statement is clearly true.[2] It is indeed as much a truism as the Quantity Equation and is simply another way of putting the Robertsonian proposition that the rate of interest is determined by the demand for loanable funds and their supply. Indeed, it does not exclude the possibility that the rate of interest may equate savings and investment, for the amount of money may be constant and there may be no change in the quantity hoarded. But if there is no reason to dispute the truth of Keynes' definition, there is every reason to examine the uses to which it has been put in explaining a dynamic process.

To return to our starting-point, a rise in businessmen's demand for funds may be met without any rise in the rate of interest, if (*a*) the total supply of money (M) is increased; or (*b*) some holders of existing stocks of money are prepared to reduce their holdings or use them more actively. For the moment no rise in M will be assumed, for it is with

---

[1] "Alternative Theories of the Rate of Interest", *Economic Journal*, 1937, p. 62.

[2] Cf. Hicks, *Value and Capital*, 1939, Chapter XII.

(*b*) that Keynes is largely concerned, and since "liquidity preference" has thus become the *prima donna* it may be left alone on the stage. In the circumstances we have supposed we should expect from the Keynesian theory that some people would in fact reduce their cash balances. Money is held, we are told, not only for income, business and precautionary motives (the M_1 balances),[1] but also because people are inclined to speculate about the future of the rate of interest (the M_2 balances). If, then, business seeks increased accommodation with the result that the rate of interest tends to rise, speculators may part with cash in order to buy securities should they feel that the current rate is tending to rise above its "normal" level. Thus funds will be made available and the M_1 balances will grow, not because total balances (M) have increased, but because the speculative balances (M_2) have decreased.

It need scarcely be observed that this summary is too brief to do justice to what Keynes said, but the main weakness of his analysis is not, I think, due to this excessive brevity. Subsequent commentators felt that he left the rate of interest "hanging by its own bootstraps" in claiming that it is determined by anticipations about its own future. The first revision of the Keynesian theory therefore involved the abandonment of his notion of a complex of rates of interest and the separate treatment of different kinds of loans. The rates charged on short loans may be largely determined by the banks but the yield on securities requires more elaborate explanation and is likely to be more affected by speculation. Clearly, however, there is a connection between the money market and the securities market and Mr. Hicks has pointed out[2] that a bond may be regarded as a series of short-term loans. Herein he believes he has found the key to the problem, for the yield will be determined not by speculation about its own future but by reference to anticipated rates on short-term loans. In support of this theory it is claimed that it provides an explanation of the relative stability of the yield as compared with short-term rates—a further step which incidentally implies that it is not even some complex of yields which is under investigation but the return on gilt-edged bonds, i.e., the "pure" long-term rate of interest. So far industrials are ignored.

Mr. Kaldor has made this interpretation of the normal yield a central part of his theory of speculation.[3] It constitutes his explanation of the motives behind speculative actions, for speculators will buy or sell bonds if the current yield tends to depart from the average of short-term rates which they anticipate.

It is claimed by Mr. Kaldor that his theory gives the rate of interest a more secure support than its own boot-straps. The fact that the yield is now explained in terms of expected short-term rates does not, he holds, give rise to any difficulty and a number of reasons are advanced in support of this claim. He says that, with regard to the rate of interest, the supply of credit is more elastic than the demand for it. Its price is therefore determined by the supply schedule, which means, in effect, by the banks. Thus an independent variable has been found, a peg over which the dangling boot-straps may be slung. In his theory, the banks have quietly resumed their position as Atlas to the rate structure, although little or nothing is said about the more general implications of their power to cancel and create credit. Nor, he goes on, will the position of the banks be challenged by speculation. First, direct speculation in short-term securities is ruled out—perhaps a little dogmatically—because their life is too short.[1] Secondly, he claims—and at this point I find the argument incomprehensible—that speculative transfers of funds to the long-term market will not indirectly affect the short-term rate.[2] Thus, he concludes, it is only in so far as speculation permits a change in income, and thus alters the demand for working balances, that it will react back on the cost of short-term borrowing.

---

[1] Little attention is paid to the possibility of an increased velocity of circulation of the M_1 balances. On the contrary, it appears to be assumed that their size will vary directly with the level of money income. Cf. *General Theory*, pp. 194–6.

[2] *Value and Capital*, Chapter XI.

[3] "Speculation and Income Stability", *Review of Economic Studies*, October, 1939.

In the circumstances assumed above, the implications of this theory appear to be as follows. An increased business demand for short-period accommodation will encounter rising charges, for we have ruled out the possibility of an increase in total deposits. Thus, these rates of interest will tend to behave as they should in order to preserve stability and the banks can hold that they have been entirely virtuous. The economy may still, however, be pushed off its perch because of the happenings in the market for securities. An increase in new issues will tend to depress security prices and speculators will then be prepared to deplete their M_2 balances and buy securities, because they look ahead and compare current yields, not with *current* bank charges, but with the charges they expect to prevail over a considerable period in the future. It is only in so far as they believe the rise in short-term rates to be permanent that they will refrain from providing in this way the wherewithal for an expansion.

IV

Clearly this will not do. First of all, even if this explanation of speculative motives is accepted, the M_2 balances still remain a little mysterious. Is it really very plausible to suggest that large sums of money, in the conventional sense of the term (cash plus current accounts), are held idle to be used when the occasion serves to buy securities? Of course, some money may be so held, but the M_2 balances do not seem big enough for the role they are called upon to play. If assets are reshuffled for the reasons suggested, is it not more likely —as Mr. Kaldor himself concedes[1]—that the movements will take place between the securities market on the one hand, and deposit account or the bill market, on the other ? If so, will these changes make any difference to the total amount of funds available to business ?

---

[1] For example, profits may sometimes be made by borrowing at call in order to buy bills and the discount rate may be affected by speculation of this kind. It may be that this qualification is of little importance.

[2] *Loc. cit.*, p. 132.

The following possibilities may be noted. (*a*) If speculators reduce their deposits, of whatever kind, there will be an off-setting rise in the deposits of those from whom they buy securities—ultimately, in the deposits of the firms which are offering new issues or selling their reserve holdings of securities. In so far as deposit accounts are reduced and current accounts increased, this involves a modification of our assumption that the quantity of money, formally defined, is unchanged. (Alternatively, we could say that the velocity of circulation of money has increased, thus adopting a wider definition of money.) At all events, the fact that deposits are being used more actively is likely to result in some drain of cash and, if there are no excess reserves, the banks may have to offset the rise in the velocity of circulation, at least in part, by reducing the volume of deposits.[2] The drain of cash may, however, be small and the excess reserves substantial, with the result that an appreciable expansion of purchasing power may take place. What has happened may be described as an increase in the velocity of circulation in so far as speculators have depleted their current accounts, or a creation of new money in so far as deposit accounts are turned indirectly into current accounts. (*b*) If speculators sell bills, the discount rate will tend to rise so that stock market credit will be cheaper only in so far as money market credit is more expensive. (*c*) But speculators will scarcely confine themselves to reshuffling their assets. They may operate as well with funds which they have borrowed from the banks, or elsewhere in the money market. This will certainly tend to raise short-term rates, as Dr. Tsiang has rightly pointed out in a recent article.[3]

It is strange that the Keynesians have always been ready to admit that an increased demand for working balances (M_1) resulting from a rise in income would raise the rate of interest. In Lord Keynes' own exposition, where the rate was a " complex ", this admission was paradoxical.[4] If the demand for investable funds has no influence on " the rate ", why should the latter be influenced by the demand for working balances ? What is the distinction, if any, between the two types of demand ? This difficulty has not been satisfactorily cleared up by the later Keynesians, although they do distinguish between short-term and long-term markets. What grounds are there for the assumption that whereas an increased demand from business for short-term accommodation will raise the corresponding rates, an increase in speculators' borrowings, or a sale of short-term bills, will have no such effect ? Furthermore, it is a little surprising, on the face of it, that Mr. Kaldor should be so anxious to argue that the activities of speculators will have no influence on short-term rates, for if one admits the opposite it is easier to provide an explanation of the greater relative stability of the long-term rate. The efforts of speculators to prevent the rise of the yield may be successful, but only by accentuating any stringency which may be present in the short-term markets—accentuating because there is already likely to be a pressure on funds as a result of increased direct borrowing by business.

---

[1] *Loc. cit.*, p. 13n.

[2] The effect on reserves will, of course, be all the greater if a higher ratio is held against demand deposits, as in the U.S.A.

[3] " A Note on Speculation and Income Stability," *Economica*, November, 1943. Unfortunately, Mr. Tsiang largely ignores the importance of both changes in the velocity of circulation of current accounts and transfers from deposit to current account.

[4] Cf. Robertson, " Mr. Keynes and the Rate of Interest " (reprinted in *Readings in the Theory of Income Distribution*).

V

Let us pause, at this point, to resume the argument. The object of the inquiry is to discover how total monetary outlay can be increased. If business tries to increase its expenditure and if total deposits are not allowed to change, it follows that aggregate expenditure can be increased only by the more rapid use of existing current accounts, or the transfer of funds from deposit to current account, which is the only way in which money can be created. Speculation may increase the possibility of expansion by these methods, but that is all. In the end, the upswing will be circumscribed by the extent to which the velocity of circulation increases and by the extent to which this limited creation of money can take place. Beyond a certain point an increase in speculators' holdings of securities will only prevent a rise in yield by forcing a rise in short-term rates with correspondingly discouraging effects.

The next step is to remove our assumption that the banks do not create money except in so far as they permit transfers from deposit to current account. In fact, of course, total deposits are likely to be expanded so long as the reserve position of the clearing banks permits, and the central bank may take steps to increase reserves. When such increases in M occur, in conjunction with the other means of expansion mentioned above, the situation corresponds more closely to that so frequently described in the more old-fashioned literature on the trade cycle which preceded the *General Theory*. Dr. Tsiang is undoubtedly right when he says in his most illuminating article, " It is the money market which is responsible in the last resort for the release and absorption of cash and which is, therefore, in that sense the source of instability ".[1] The Keynesian theory is gravely at fault in placing so much central emphasis on liquidity preference and speculation, for it has left the impression that therein lies the basic explanation of instability. In fact, such theories, essential though they are to a full understanding of the credit economy, supplement rather than replace the older explanation which stressed the decisive role of the banks. No doubt the Keynesians were fully conscious of this role themselves, but at least their exposition was at fault.[1] Thus teaching experience shows that a good undergraduate, who is familiar with the Keynesian theory, may have little or no inkling that the creation of money is of basic importance. He may rather be inclined to think that the earlier theories were too simple-minded and have been completely superseded by the more esoteric explanation. Of course, to suggest that Keynes overlooked either the possibility or the importance of an increase in aggregate deposits would be absurd but, partly because he preferred a "snapshot" supply and demand analysis to the loanable funds approach, the importance of bank action was obscured and attention was concentrated on changes in M_2 rather than changes in M.[2] Even much of the later literature leaves one with the impression that the extent of speculative purchases will be limited by the initial size of the M_2 balances at the disposal of the speculators.

---

[1] *Loc. cit.*, p. 288. Presumably " the money market " includes the banks.

A further modification must be made before we turn to a fresh topic. In the argument so far, it has been the "speculators" in the broadest sense of the term who have provided the link between different parts of the loan market. The banks themselves, however, may influence the level of security prices directly by open-market transactions. Indeed, it would appear that the revival of general activity tends to precede the rise in advances, and the investment purchases of the banks have therefore all the greater relative importance in the early stages of the upswing.[3] There may be narrow limits to the extent to which the banks can hope to initiate recovery by pushing up security prices but their open-market policy can at least help towards the provision of an elastic supply of purchasing power when, for some other reason, the expansion has begun. Firms with reserve holdings of securities can sell out and acquire deposits without incurring heavy losses and, furthermore, as a result of arbitrage transfers, the cost of raising industrial capital will be held down if easy conditions prevail in the market for gilt-edged.

VI

Seen in perspective, the theory of liquidity preference is an attempt to explain the arbitrage movements of funds between different parts of the capital market. It must be admitted at once that some such explanation was badly needed. In particular, although earlier writings on effective demand had referred to the possibility of hoarding or dishoarding, they said little about the factors which might determine the amount hoarded or about the way in which this amount might vary over the cycle. It can scarcely be claimed, however, that the Keynesian explanation adequately filled the gap.

---

[1] The writer's own exposition was faulty in this respect in the second chapter of *Fluctuations in Income and Employment*, 1942.

[2] It is significant that Lange contents himself with a bare reference to changes in M in a mathematical footnote to "The Rate of Interest and the Optimum Propensity to Consume" (*Readings in Business Cycle Theory*). Hicks makes fuller allowance for changes in M in "Mr. Keynes and the 'Classics'" (*Readings in the Theory of Income Distribution*). In his article, "Alternative Formulations of the Theory of Interest" (*Economic Journal*, 1938), Lerner begins well but soon falls, as ever, into the quagmire of *ex post* definitions. Kaldor's references are obscure (*loc. cit.*).

[3] Sayers, *Modern Banking*, pp. 232 *et seq.*

It will be recalled that Mr. Hicks and Mr. Kaldor are mainly concerned with the yield on gilt-edged, which is in itself a little odd. Of course, such procedure would be appropriate if one were investigating the cost and the source of funds borrowed by the state but for the purpose of trade cycle study it would seem more appropriate to direct attention at once to the market for industrial securities. Furthermore, it is there that speculators are likely to be most active. Keynes, himself, did not adopt this method of approach, and his speculators who are trying to beat the gun are a very different type from Mr. Kaldor's careful arithmeticians with their eyes fixed on the relationship between expected short-term rates and the yield on high-grade bonds.[1] Indeed, the gilt-edged market is often described as non-speculative and although this may be an exaggeration it is certainly not the centre of speculation. Presumably the term " speculator ", as used by Mr. Hicks and Mr. Kaldor, must be interpreted in some special sense but the abrupt disappearance of the more familiar specimen should provoke some comment. No doubt it would be sensible for an investor to compare anticipated rates on short-period loans with the return on gilt-edged but one would have thought that the speculator in the more usual sense of the term would have been the last person to be interested in such long-term forecasts. He buys, partly with borrowed money, in the hope of selling quickly and making a capital gain and must be remarkably uninterested in future short-term rates over the life of the security he has purchased.

Mr. Kaldor, it is true, goes on to say that there are additional risk premiums to be taken into account in the case of shares[2] and from a purely formal point of view it may be possible to build up a kind of pyramid beginning with short-term rates and moving up through a number of stages to low-grade equities. But in doing so there is some danger of obscuring the workings of the capital market. Furthermore, he does not emphasise the *changes* in the margins between different types of asset which take place over the cycle. During the expansion, there is usually some rise in short-term rates and a more modest increase in the yield on gilt edged, but share yield is likely to fall relatively and there may even be some relative decline in the yield on lower-grade bonds. These changes may clearly be of some importance for the cost of industrial borrowing and must be regarded as one of the cumulative features of an upswing.[1] Nor is the importance of rising confidence adequately reflected in changes in the "spread" between the yields on various kinds of securities. Allowance must also be made for alterations in the quantities of each type of asset offered on the market. (It is a fair comment in passing that this obvious point has not always been remembered by the more theoretical writers, whose use of the term "marginal" in this context appears at times to be only a matter of form.) Thus the increase in confidence during an expansion may permit a relative decline in the yields of the risky securities in spite of the fact that there are relatively more shares and lower-grade bonds to be taken up.

---

[1] It may be noted in passing that Dr. Tsiang's speculators apparently belong to the Keynesian species, although he takes Mr. Kaldor's article as his starting point. He appears to be unaware that there are different varieties.

[2] *Loc. cit.*, pp. 16–17.

In the case of gilt-edged, the risk premiums do not fluctuate much and these securities have a fairly steady market, favoured as they are by holders of trust funds and the more cautious investors. But it does not appear to be very sensible to talk as though an increased demand for loanable funds will impinge on this particular market and then to explain why, in such a case, the yield does not rise. By doing so one is in danger, at best, of making an unnecessary detour, and, at worst, of ignoring the main highway for speculative funds—in the more usual sense of the term—which runs directly between the short-term market and the market for industrials. With regard to the latter, there is no stability of yield to be explained although the movements which take place are likely to be in the opposite direction to that required if stability of income is to be preserved. In attempting to account for a release of cash from short-term balances or for increased purchases of securities with borrowed funds, is it not the rise in confidence and the hope of making capital gains which should be stressed, rather than some nice adjustment of the yield on gilt-edged to expected rates on short-term loans? No doubt it is true that arbitrage movements will preserve some kind of relationship between the price of high-grade bonds and anticipated conditions in the money market, a fact of obvious interest and importance for the study of government finance. Furthermore, developments in the gilt-edged market will, of course, have some influence on the price of industrials. But, when all has been said, one is left with the impression that the theories of Mr. Hicks and Mr. Kaldor are somewhat unbalanced and that the determination of the "pure" rate of interest does not deserve to have quite such a central place in the study of effective demand.

---

[1] The following figures for changes in the "spread" between Moody's Aaa and Baa bonds illustrate this point. The reader can correlate these changes with the general fluctuations in trade. A comparison between the yields on Aaa bonds and shares respectively gives a similar result.

Yield on Baa bonds minus yield on Aaa Bonds

1923	2·12	1928	0·93	1933	3·27
1924	1·83	1929	1·17	1934	2·32
1925	1·39	1930	1·35	1935	2·15
1926	1·14	1931	3·04	1936	1·53
1927	0·91	1932	4·29	1937	1·77

VII

To sum up. One can best begin an exposition of the problem by making a list of the familiar kind of the advantages and disadvantages of holding different kinds of assets.[1] It must then be added that the relative rates of return—whether in cash or in, say, security—will be affected by the quantities of each type of asset available. When this has been done, the working of the mechanism can most easily be shown by using the Robertsonian technique and asking what will happen if there is an increase or decrease in the demand for loanable funds. At this point the crucial role of the banks must be stressed. During an expansion, not only may they supply those in search of short-term credit directly with newly created deposits but an elastic supply of bank credit will have repercussions on the whole capital market. Thus the reshuffling of holdings of assets or speculative purchases with money borrowed from the banks or open-market purchases by the banks themselves will tend to check a rise in security yields. Even if short-term rates do go up to some extent, there is unlikely to be a comparable fall in the prices of securities. First, in the case of gilt-edged, there is a steady market and those inclined to make arbitrage movements will have in mind future short-term rates—not merely those prevailing at the moment which may stand above this anticipated average. Secondly, with regard to the more risky industrial securities, it might be said that there will be no reason to expect falling prices so long as there has been no change in the risk premiums which differentiate them from gilt-edged, but such an observation would be a little academic. As the upswing gathers way, risks will appear less grave and the chance of capital gain more attractive, and these changes in themselves will tend to encourage dishoarding and speculative purchases with borrowed money to such an extent that over a large part of the field of industrial borrowing, costs may not rise and may even decline. In short, the prices of industrial securities are much affected, as Keynes so clearly saw, by anticipations with regard to their *own* future. Mr. Hicks and Mr. Kaldor have to some extent obscured the issue by claiming that the anticipations relate to what is happening in another market, i.e., the market for short-term loans. Is it not true that Keynes, himself, was nearer the truth and that the fear of circular reasoning has become morbid ? Of course, it would be absurd to hold that these yields *exist* because of speculation about their own future in the sense that they would disappear if such forecasting ceased. But that is an entirely different proposition and the more reasonable interpretation stands. There has been too much talk of boot-straps.[2]

---

[1] Cf., e.g., Hicks, *Value and Capital*, Chapter XIX, and Somers, " Monetary Policy and the Theory of Interest ". (*Readings in the Theory of Income Distribution.*)

[2] In developing the argument above we have confined ourselves largely to what happens during an expansion. Most of what has been said applies in reverse to a contraction but it is also necessary to emphasise that the advantages of liquidity are likely to prevent a decline in rates of interest below certain levels, which may be well above those at which, with income given, savings and investment can be equated. It was this fact which Keynes had so much in mind. Hence Hicks' remark that " the General Theory of Employment is the Economics of Depression ". (" Mr. Keynes and the ' Classics ' ", *op. cit.*)

To go much beyond this requires a great deal more empirical knowledge than we possess. For example, we know very little about the extent and responsiveness of arbitrage movements. It need scarcely be said that more statistics are required and it is encouraging that the National Bureau of Economic Research has begun work in this field. But it is also desirable to obtain the views of those with long practical experience in the capital markets, and there appears to be scope for an inquiry of the kind conducted at Oxford before the war into the effects of the rate of interest. It may be that we should have learned a great deal more in the past and progressed much more rapidly if the whole discussion had not been couched in terms which were so pedantic as to discourage practical experts from joining in.

If the comments above on the new Keynesian theories are accepted, it may be felt that their contribution has not been large. Is it not a fact that the originality of the new theories is deceptive and disappears when the exposition is simplified ? There may be some truth in this. No doubt the time for a certain amount of debunking has come. But in any balanced appraisal of the Keynesian contribution the following points should, I think, be stressed. First of all, although the importance of hoarding and dishoarding—or speculation—was recognised before the publication of *The General Theory*, there was still work to be done in order to discover how this factor operated in different circumstances. Every one knew that if money were taken out of hoards, this would facilitate an expansion, but was there any reason to suppose that hoarders would in fact behave in this way when investment demand increased ? The Keynesian answer—when one has deciphered the new and deplorable terminology—is in the affirmative, and this is clearly an important contribution. Those interested in the history of these ideas would do well to compare, say, Mr. Durbin's *Problem of Credit Policy* (1936) with Mr. Kaldor's article on speculation discussed above. The former contains a very useful statement of the earlier position and is superior to Mr. Kaldor's article in that it is not only more intelligible but more balanced. The question, " Where does the money come from ? ", is squarely faced and the answer is comprehensive and clear. It is inferior, however, in that it says so little about the way in which speculators are in fact likely to behave, although it is recognised that their behaviour may have important repercussions. It was in dealing with this question that Mr. Kaldor developed Keynes' original analysis, broke new ground and made a valuable contribution. Secondly, it is not, I think, the theory of liquidity preference which deserves most attention from the reader of the *General Theory*, but rather Keynes' use of what may be broadly termed the Theory of the Multiplier. Granted that effective demand may fluctuate, what are the main factors which will determine the magnitude of the fluctuations ? Keynes gave at least a provisional answer to this question and, unlike so many of his contemporaries, did not boggle at the implications for policy. As a result, the whole method of approach to such matters as the budget, wages and international trade has been radically altered. His theory of liquidity preference may be far less adequate than he supposed but that detracts only a little from the importance of his general theory of effective demand. There may still be a good deal of ignorance about the transfer of funds within the capital market but, largely as a result of Keynesian efforts, enough is known about monetary unemployment for practical purposes, in particular for the formulation of a full employment policy[1]. The refinements can come later and I am keenly aware of the need for more empirical work. But with regard to basic principles, it seems unlikely that much in the way of fundamental change will be required.

---

[1] There can be little excuse for those American economists whose reluctance to face this issue leads them to overemphasise the marginal defects of the Keynesian analysis. It would not be unfair to say that many of these critics of Keynes seem incapable of synthesising their own, often acute, observations into any kind of coherent explanation of the whole problem. Presumably they will be content to split hairs while their economy crashes into a new slump. Cf., in particular, *Economic Stagnation or Progress* by E. W. Swanson and E. P. Schmidt, which contains many extracts from the American conservatives.

Comparative Shipping and Shipbuilding Costs

By R. O. Roberts

A knowledge of the operating and capital costs of vessels of the main maritime countries is essential to an enlightened discussion of many aspects of shipping practice. It is fundamental, for example, to consideration of the likely future trend of the net shipping earnings of a country; and cost differentials, as the United States Merchant Marine Act of 1936 made clear, govern modern subsidisation policy. One of the most difficult tasks of the Maritime Commission created by that Act was to discover the difference between U.S. and other shipping costs.[1] Though the approximate magnitude of the differentials are known from the Commission's pre-war reports, its detailed findings, if they have been published, are not known in Great Britain; and the British literature of transport economics seems to contain only fragments of the international cost picture.

An attempt is made in this paper to piece together these and other fragments for the 1920's and 1930's, but the lines of the resulting picture are subject to a wide margin of inexactitude. The difficulty of making representative choices (e.g., of vessels by age, tonnage, method of propulsion, etc., and of dates[2]), the lack of data (largely owing to the fact that they have not been assembled), and fluctuations in currency values—all these make comparative cost computations extremely difficult.

There are available in published sources a few examples of subdivisions of total operating costs for certain typical cargo and passenger vessels[3], and information may be gleaned about some of the capital costs. All these costs items, however, will not be investigated here since some of them usually show little or no variation as between different countries. These are isolated in the following table:

TABLE I

INTERNATIONALLY VARIABLE AND NON-VARIABLE SHIPPING COSTS[4]

(*a*) *Costs tending to vary with the nationality of the fleet*	(*b*) *Costs showing little or no tendency to vary with the nationality of the fleet*
Salaries and Wages	Marine insurance
Subsistence, etc.	Stevedoring
Fuel	Other cargo expenses
Interest payments	Port Charges
Depreciation costs	Agents' Compensation
Repair of vessels	Brokerage
	Advertising
	Administrative expenses

---

[1] The difficulty was realised at the time: cf. R. L. Dewey, *American Economic Review*, June 1937, p. 247.

[2] For the considerable fluctuations in some of the capital costs during the two decades covered by this paper, see the figures given in the broadsheet *Fairplay*; for examples of variations in operating costs, see below.

[3] A. Berglund, *Ocean Transportation* (University of Virginia Press, 1931), pp. 238–239; C. E. Fayle, *The War and British Shipping* (Carnegie, O.U.P., 1927), p. 459.

[4] Berglund, *op. cit.*, p. 385.

The items in column (*a*) of Table I are the particular concern of this paper and their relative importance as well as that of the items in column (*b*), is estimated in the following Table II.

TABLE II

EXAMPLES OF THE APPROXIMATE RELATIVE IMPORTANCE OF INTERNATIONALLY VARIABLE AND NON-VARIABLE SHIPPING COSTS IN THE EARLY 1920's

In percentages of Total Costs

COSTS[1]	I	II	III	IV
VARIABLE COSTS :				
Salaries and Wages	8·0	12·9	14·4	10·3
Subsistence	2·2	2·9	3·0	9·9
Stores		2·1	3·1	7·7
Fuel	19·7	19·0	22·6	21·0
[2] Interest	10·3	12·9	14·4	10·3
[2] Depreciation				
Repairs	36·9	10·7	4·0	11·9
NON-VARIABLE COSTS :				
Insurance				5·1
Stevedoring and Cargo	10·3	19·1	20·6	18·1
Port Expenses	10·3	7·5	4·7	
Agents' Compensation		7·6	8·2	3·3
Brokerage		5·3	5·0	
Advertising				2·4
Administrative				
Office and Miscellaneous	2·3			
Total	100·0	100·0	100·0	100·0
Of which Variable		60·5	61·5	71·1
Non-Variable		39·5	38·5	28·9

---

[1] The data used for the construction of this table covered operating costs only; interest and depreciation charges were omitted in the data except for Column I which included depreciation with repairs and insurance costs. To obtain percentages of *total* costs interest charges had to be added to the data of Column I and interest and depreciation to the other three columns.

The interest charge of the British vessel of Column I was taken to be 5 per cent. of the initial value of the vessel (£336,420—which would seem to be an inflated wartime price). There is some precedent for adopting this rate despite the magnitude of interest movement over time and place. For example, Calvin and Stuart, in *The Merchant Shipping Industry* (New York, 1925, p. 218), have shown that representative British cargo shipping companies distributed average dividends to stockholders of 4.8 per cent. of paid-up capital in 1904–1913, and that their return on the total of paid-up capital, debentures and loans was 6.05 per cent.

Professor Berglund (*op. cit.*, pp. 241–242) adopts interest and depreciation charges of respectively 6 per cent. and 5 per cent. and Calvin and Stuart (*loc. cit.*) showed further that, while the companies they considered allowed 4.3 per cent. of the cost of the ships for depreciation it was generally agreed that 5 per cent. should be allocated to wear and tear and obsolescence. Obsolescence has, of course, been a fairly serious charge for shipping since the recent development of oil-burning boilers and Diesel engines. The very low paid dividend and depreciation rates of the 1930's (cf. Chamber of Shipping *Annual Report*, 1936–37, pp. 47–48, and *Times*, Jan. 12, 1939) were obviously abnormal.

Columns II and III refer to U.S. cargo vessels of respectively 7,696 d.w.t. (about 4,500 gross tons) and 8,878 d.w.t. (roughly 5,300 g.t.). The annual pay roll of a U.S. Shipping Board 5,000 g.t. coal-burning cargo vessel was about $40,000 in 1925 (Berglund, *op. cit.*, p. 245). The probable value of a new U.S.-built vessel of that capacity at the time was about $400,000 (cf. *ibid.*, p. 241). Interest and depreciation at 10 per cent. of this value are roughly equal to the annual pay-roll. In Columns II, III and IV interest and depreciation are, therefore, included as being equal to wages and salaries.

[2] To these so-called "capital costs" Professor Berglund, in classifying costs (*op. cit.*, p. 233), adds "rentals for properties leased and vessels chartered" and "taxes" to form the group "Non-operating Charges". Without obtaining the original figures there is no means of knowing

Column I is based on records of six 7,700 mile trips of a British 8,010 d.w.t. cargo steamer with a crew of 48, in 1920 (Calvin and Stuart, *op. cit.*, pp. 9–10).

Column II is calculated from U.S. Shipping Board figures (reproduced by Berglund, *op. cit.*, p. 238) of operating expenses of a 7,696 d.w.t. cargo steamer on the North America–United Kingdom route. The date is not given.

Column III is based on operating costs drawn from the same source, and refers to an 8,878 d.w.t. U.S. cargo steamer plying on the U.S. Pacific ports–Orient routes. Again the date is not specified.

Column IV is based on "Operating Expenses per average voyage of U.S. Shipping Board's Passenger Steamers, January–March, 1923" on three routes: New York–London, San Francisco–Orient, New York–Eastern South America.

The figures of Table II make possible a fairly well-balanced view of the international differences in the items thus listed. The proportions of salaries and wages, fuel, subsistence and stores also show significant similarity when read across the table, though a larger sample of vessels of various tonnages and types would doubtless produce a somewhat different cost pattern from that shown here. In Table II the variable costs account for about 60 per cent. of the total for cargo vessels and—mainly because of their relatively higher subsistence and store expenses—about 70 per cent. for passenger vessels. Full comparative information is unfortunately not available for all these variable items, but some details can be given for the most important.

LABOUR COSTS

Apart from the efficiency of labour in shipping and of its utilisation, which differ little from country to country, labour costs depend upon manning requirements, upon salary and wage rates and upon hours worked, and all these differ for different mercantile marines. According to the data of Table II wages and salaries account for 8–15 per cent. of total costs.

(*a*) *International Wage and Salary Rates.* These may be compared on the basis of the following Table III:

From Table III it will be seen that British shipping salary and wage rates, though high, were by no means the highest that entered into the international comparison. In 1936 the United States, Australia, Canada, the Netherlands and, probably, Germany (because of the high salaries of its officers) paid higher rates to their seamen than did the

---

how far these two items also are included, under various headings, in each of the examples of Table II. It will be noticed that certain items (stores and agents' compensation in Column I, insurance in Columns II and III, and brokerage and administrative expenses in Column IV) must have been included under other headings.

United Kingdom; and France and Denmark paid nearly as much as the U.K. The only countries of which it might be said *prima facie* that they had then a competitive advantage over Great Britain because of their lower wage rates were Japan, the Baltic States, Belgium, Greece and Italy.

TABLE III

INTERNATIONAL WAGE AND SALARY RATES

(Monthly Rates in £ Sterling)

(1) *Country*	(2) 1920 (C. E. Fayle's figures)			(3) 1936 (I.L.O. figures)			(4) 1938 (British Chamber of Shipping figures)		
	Chief Officer	Third Officer	O.S.	Chief Officer	Third Officer	A.B.	Chief Officer	Third Officer	A.B.
Great Britain ..	29·0	20·0	14·5	20·6	11·7	8·7	19·3	13·0	9·6
U.S.A.	65·0	50·0	24·1	31·8	25·5	11·8			
Netherlands ..	33·7	17·7	11·5	28·4	14·4	11·3	25·0	13·6	9·9
Denmark ..				21·8	10·0	7·5	23·7	12·3	8·9
Norway ..	27·7	19·1	13·7	17·3	10·5	7·5	20·1	11·8	8·5
Sweden				17·0	10·3	6·2	20·6	12·2	8·7
Belgium				14·7	9·0	7·0	15·2	10·1	7·7
Greece				10·5	—	5·3	16·0	—	7·0
Germany ..				24·0	14·8	8·2	27·5	16·7	10·0
Italy	11·3	8·1	3·8	13·7	10·1	5·4	14·5	10·8	5·5
Finland ..				14·1	9·7	4·4	14·2	8·4	5·1
France	16·9	12·0	6·5	19·4	16·4	7·2	10·5	—	5·2
Estonia ..				9·9	6·3	4·6	11·1	7·5	4·3
Latvia				6·0	—	2·4	8·3	5·5	3·6
Japan				8·1	4·7	2·6	10·9	6·3	3·4
Canada				24·9	16·5	9·1			
Australia ..				23·1	17·7	11·4			

[*Note :* The monthly rates in this Table are converted into £'s at official exchange rates.]

In 1938 wage and salary scales in Dutch shipping were still higher than the corresponding British rates; Denmark, Norway and Sweden had higher shipping salary scales, though lower wage scales than Great Britain; and it may be guessed that the U.S.A., Canada and Australia continued to pay higher wages and salaries to their seamen than did Great Britain. Between 1936 and 1938 it would appear that the competitive advantage, on the score of wage and salary rates, of Norway and Sweden over the U.K. in shipping had been eliminated, and that of Italy and Japan had been reduced. Moreover, the competitive disadvantage on this score of the German shipping industry—probable in 1936, definite by 1938—must have been considerably greater than the table shows in view of the (45–75 per cent.) over-valuation of the official R.M. rate after 1933. It seems clear that wage and salary rate differences were important determinants of competitive power in shipping, but taken alone they fail to account for the nature or direction of the competition; thus, for example, they fail to account for the competition experienced by British shipping from Scandinavian quarters in the late 1930's.

(*b*) *International Manning Scales.* Variations in manning scales may be illustrated by the following Table:

TABLE IV

MANNING SCALES ON VESSELS OF 5,000 G.T., 1938[1]

	Master and Navigating Officers	A.B.s	O.S.	Boys, etc.	Total (Boy = ½)
Great Britain	4	6 5	2 4	1 –	12½ 13
Denmark	4	6	3	–	13
Germany	4	5	3	2	13
Greece (4,200–5,200 g.t.) ..	3	7	–	1	10½
Italy	3	6	1	1	10½
Norway	4	5	3	3	13½
Sweden (4,050 g.t.)	4	5	2	2	12

The comparisons which might be made on the basis of these scales are, however, vitiated in so far as "there are usually very many methods of substitution under each scale, because the definition of A.B., Efficient Deck Hand, Ordinary Seaman and Boy vary from country to country, and because in practice the minimum scales may be considerably exceeded"[2]. In the last column officers, A.B.s and O.S. are arbitrarily regarded as equal units; and there is no clear method of weighting, say, Great Britain's 6 A.B.s and 2 O.S. against Norway's 5 A.B.s and 3 O.S. Moreover, strictness in the enforcement of these and similar manning scales is said to have varied considerably between different countries; and such important maritime countries as Japan and the U.S.A. are omitted. Denmark, Finland, Germany, the Netherlands, Norway and Sweden are averred to have saved up to £16 per month per tramp vessel as a result of their employment of Mate-Operators, who combined wireless and navigating duties. From the data available, British vessels suffered a superficial competitive disadvantage on account of the lower manning scales of Greece and Italy as shown in Table IV, the lower manning scales of Japanese vessels shown in Table V below, and the foreign use of Mate-Operators. That disadvantage was real in so far as U.K. vessels were not more efficient because of their higher manning scales.

An expression of the scales of Table IV in terms of wage units would be useful but unfortunately the data for the purpose in Table III are not adequate and there is the further difficulty presented by the employment of lascars who received very low wages as shown below. During the quinquennia 1890–1894 and 1930–1934 the British Mercantile Marine employed respectively 24,628 and 52,286 lascars out of its total numbers of seamen of 239,951 and 202,694.[3]

---

[1] Chamber of Shipping, *Fact Finding Report, Deep Sea Trades* (1938), pp. 48–49. For a comparison of British and Japanese messing scales see Table VI below.

[2] *Ibidem.*

[3] H.M.S.O. *Statistical Tables relating to Foreign Trade and Industry*, Cmd. 1954 of 1909 and *Statistical Abstracts.*

(*c*) *An example of the Effect of Salary and Wage Cost Differences.* The following Table V shows in an extreme form how competitive power was governed by salary and wage differences.

TABLE V

BRITISH AND JAPANESE CARGO LINER WAGE AND SALARY COSTS, 1936[1]

Category	*British India Cargo Liner*		*Japanese Cargo Liner*	
	No. in category	Total Earnings per Month	No. in category	Total Earnings per Month
		£ s. d.		£ s. d.
Masters, Officers, Engineers *plus* wireless operator, clerk and carpenter	13	334 15 0	13	108 11 2
Leave pay of officers and Engineers	—	49 7 6		
Deck crew	26	58 10 0	18	62 18 10
Engine crew	28	50 18 6	24	82 6 2
Saloon crew	10	29 11 0	6	23 14 10
TOTALS	77	£523 2 0	61	£277 11 0

This Table is largely self explanatory; the two totals columns show clearly that the Japanese competitive advantage in the matter of wages and salaries was considerable, and the constituents of these totals indicate that this advantage was wholly due to the fact that the salaries of British officers and engineers were 3½ times as high as those of the Japanese. Most ships of all flags plying on the Eastern trade routes were manned by Orientals, so that discrepancies in labour costs were almost necessarily the result of 'white' superintendence and 'messing'. The average British officerial salary of £308 p.a. in addition to board and accommodation was 64 per cent. of total British wage and salary costs; but it would obviously have been impossible to reduce this item in view of what these men could have earned at home for similar work, nor could their leave pay of £49 7s. 6d. (for which there was no Japanese equivalent) have been much reduced.

It is interesting to find from Table V that Japanese deck, engine and saloon crews were better paid than the corresponding British crews (with what effects on relative efficiency ?). This seems at first rather difficult to reconcile with the I.L.O. wage figures for 1936 in Table III above, where the monthly rate paid to British A.B.s appears as £8·7 and that to Japanese A.B.s as £2·6. The explanation seems to be as follows: the Japanese figure in Table III is the average monthly rate of all "sailors" on vessels of 1,500 g.t. and over and the actual monthly rate of second class sailors, namely 44 yen.[2] In the example reproduced in Table V, ten of the Japanese deck crew of 18 were paid at that rate; the other members of the deck crew (except 2 O.S. at

---

[1] Imperial Shipping Committee, *Shipping in the Orient* (1939), pp. 123–125.

[2] I.L.O. *Maritime Statistical Handbook* (1936), p. 219.

30 yen) received more than 44 yen per month. On the Japanese side, therefore, Tables III and V roughly correspond. The British deck crew of 26, however, in Table V did not contain a single seaman who received the A.B. wage rate of £8·7 quoted in Table III; for the highest wage for any in that group was only £4·5 (60 rupees) per month and that was paid only to one "serang". Over half the deck crew (14 of the 26) were lascars who received wages of only £1·8 per month.[1]

(*d*) *Subsistence.* Subsistence may be approached both by considering messing costs in the somewhat extreme case of the British and Japanese cargo liners whose wage costs were given in Table V, and by generalising from the victualling allowances of different countries to their seamen when food is not supplied on board ship in ports:

TABLE VI

MESSING COSTS PER MONTH IN 1936[2]

British Cargo Liner		*Japanese Cargo Liner*	
Messing for 11 at £6 3 8	=£68 0 4	Messing for 11 at £1 5 8	=£14 2 4
Messing for 2 at £3 7 6	= £6 15 0	Messing for 50 at £1 1 0	=£52 10 0
Messing for 64 at 18 0	=£57 12 0		
Total for 77	£132 7 4	Total for 66	£66 12 4

It appears that messing was roughly twice as large an item of cost for the British as for the Japanese liner and that the discrepancy was largely due to the fact that the cost of messing 11 of the British crew (the officers and engineers) was nearly five times as large as that for the corresponding 11 Japanese. Moreover, the inequality of feeding as between officers and other seamen was less on the Japanese than on the British vessel; and Japanese deck, engine and saloon crews actually received on average slightly more costly messing than the corresponding British crews. The weekly food cost of 4 shillings per man for lascar and other non-officerial sailors on the U.K. cargo liner in 1936 might be related to two expert British estimates of the weekly value of food requirements in Great Britain at the time for families of respectively 5 and 4, namely £1 0s. 6d.[3] and £1 3s. 4d.[4] The comparison, however, would not be fair in so far as the shipping company recorded its messing costs at *wholesale* prices. In contrast to wages, therefore, the messing costs of lascars and other seamen on the British vessel compared fairly favourably with conditions within Great Britain.

It might be presumed more generally that victualling costs varied between the U.K. and other countries in a manner which roughly resembled wage and salary rate variations. It would follow that the British competitive disadvantage compared with Japan in the matter of subsistence was not typical, though the U.K. was at a disadvantage also compared with the Baltic countries, Belgium and Italy. It would also follow that the U.K. was in a position of advantage as against the U.S.A., Australia and probably Germany. This is borne out by the following Table VII, which shows, however, in contrast with the wage rate situation, that the U.K. was at an advantage compared with France in victualling costs.

---

[1] Imperial Shipping Committee, *op. cit.*, p. 123.

[2] *Ibidem.*

[3] B. S. Rowntree, *Progress and Poverty* (1941), p. 28.

[4] R. F. George, *Journal of Royal Statistical Society*, Part V (1937), pp. 90–91.

TABLE VII

INTERNATIONAL VICTUALLING ALLOWANCES IN PORTS, 1936[1]

Country	*In shillings per day* *Officers*	*Other Ratings*
Great Britain	4·0	3·0
U.S.A.	10·2	6·0
Germany	?	4·4
France	5·5	3·8
Italy	2·1	1·3
Belgium	2·2	—
Australia	8·3	4·5
Denmark	4·0	3·1
Estonia	3·6	2·8

It is relevant to quote the following excerpt from a memorandum prepared by the British Shipping Federation in 1938 which states concerning the statutory victualling scales of different countries that: " it is impossible to make any effective comparison because (i) the scales are minimum scales and, therefore, do not give the messing actually provided; (ii) the dietary of different nations varies considerably—e.g., the wine and beer allowance in the French scales; (iii) the " equivalents " allowed vary for each country; and (iv) the cost of the same article varies, not only from country to country, but even in different places within the same countries ".[2]

(*e*) *Conditions of Service, etc.* These depend on factors which vary little as between the vessels of different countries (e.g., supply of bedding, etc.) and on some other factors which vary internationally. " The statistics available are insufficient for comparison but there can be no doubt that the social service charges borne by British shipping are much heavier than those borne by any other Mercantile Marine ".[3] On this topic, however, the evidence is often conflicting and contrary to what might be expected. Thus, according to the Port Medical Officer of Cardiff in 1936, 1,085 out of 1,661 British vessels then visiting that port " exhibited dirt, vermin and other conditions prejudicial to the health of the seamen " whereas only 480 out of 955 foreign vessels inspected " were in a similar condition " [4] The U.S. Maritime Commission admitted that during the 1920's "some American seamen were . . . living under wretched conditions, eating unpalatable food, and working 12 hours or more a day".[1]

---

[1] Calculated from supplementary footnotes in the I.L.O. *Maritime Statistical Handbook.*

[2] Chamber of Shipping, *Fact Finding Report, Deep Sea Trades*, p. 50.

[3] *Ibidem.*

[4] *The Shipping World*, October 28, 1936.

FUEL

Fuel is the largest single item of the internationally variable costs and it accounts, as was shown in Table II, for some 19–23 per cent. of total costs. As far as can be determined the figures forming the basis of this percentage refer to coal-burning steamers, whereas it appears that the importance of fuel in relation to other costs would be more by about 5 per cent. in the case of oil-burning vessels.[2] *Prima facie* it would appear that the international differences in fuel costs could not have been great since all the vessels on any route would tend to obtain their fuel at the same price and in the same place, namely where it was cheapest. The facts, however, are not quite so simple for the 1920's and 1930's.

The British shipping industry was originally interested primarily in the adequacy and certainty of the supply of coal, and secondarily in its price. It appears that "the first coaling stations were organised to meet the requirements of British mail and passenger steamers";[3] this obviously gave to British shipping an initial fuelling advantage. The vessels plying on routes which have a number of well-spaced bunkering ports obviously have to carry less fuel than those on routes where such facilities are lacking; the main routes on which British coal-burning liners traded before 1914 had a number of such stations supplied with cheap British coal—for example the Azores, Madeira and the Canary Islands, and further away St. Vincent, Port Said, Cape Town and Colombo. The lack of good fuelling stations in certain parts of the world in which they were interested was undoubtedly then a handicap to American shipowners, and it seems that the net of established stations could not serve American steamers as well as the British. Some of the European competitors with British ships, though they could conveniently use the bunkering stations named, suffered from a lack of coal at their home ports. British tramp vessels, before 1914 about two-thirds of the total U.K. tonnage, would seem at first sight to have benefited less than liners from the strategic bunkering ports because they followed the main routes less closely; but their advantages seem to have been real enough. They "depended not only upon cheap coal for bunkers but upon cargoes of coal outbound to countries whose products were lacking in the United Kingdom, or to distant bunkering stations. It was frequently possible for ships to have paying outbound and inbound cargoes with low operating costs. No other country possessed this combination to such a marked degree ".[1] That was before 1914; by 1931 Professor Berglund was able to write that: " Fuel is at least as cheap for the American as for the foreign carrier. This is true whether the fuel is coal or oil."[2]

---

[1] *Economic Survey of American Mercantile Marine* (1937).

[2] Cf. Berglund, *op. cit.*, pp. 336–338.

[3] A. W. Kirkaldy and A. D. Evans, *History and Economics of Transport* (London, 1931). p. 323.

Moreover, after the establishment of the cartel schemes under the British Coal Mines Act of 1930, there was " the constant difficulty . . . of getting the requred coal supplies at the material time and at prices fixed in relationship to prices of competitive fuel ".[3] This difficulty provides one reason for the tendency to substitute oil for coal as ship fuel and for the 30 per cent. fall in British bunker sales to foreign vessels between 1929 and 1937.[4] As a result of other factors (viz., the saving of the 40–46 cu. ft. per ton bunker space, the possibility of utilising any leakproof space for oil, the saving of ⅓ of firemen costs, greater cargo space owing to elimination of boilers in motor vessels, though not in oil-burning steamers, the smaller amount of work in the stokehold and its less arduous nature, etc.) oil was gradually replacing coal as navigating fuel. For the mercantile marine of the U.S.A. oil was accessible and cheap, whereas it had to be brought 4,000–6,000 miles to Great Britain and had to be paid for at a price which covered the " unbalanced " voyages of the tankers which carried it.[5] This was more a disadvantage of U.K. coastal shipping than of British ocean-going vessels. " A ship is not obliged, of course, to bunker at one or other end of her voyage, and the majority of oil-using ships do not, because on long distance trips, at less cost than at the terminal port, they can generally pick up oil practically ' native ' at some way port of the vast network of marine filling stations which have now sprung up on the world's trade routes. On Far Eastern runs, for example, ships from England via Suez can often bunker for round trips very advantageously at Suez. Suez is near the big Persian oil fields, and if Persian oil is used the price for the fuel is regulated partly by the length of haul from the source. Oil may cost in Trinidad several shillings per ton less than in London . . . one oil user—the motorship—only needs to bunker once for a round trip of medium length against the three or four times of the coal-burning steamer. Motorships now make the 9,700-mile trip from New York to Sydney (via Panama) and the 9,700 mile trip back with one bunkering—at Panama. Panama can supply oil from, say, the Mexican fields, about 1,380 miles distance, or from the Colombian fields, or from California. The coal has to come from Hampton Roads, nearly 2,000 miles away . . ."[1]

---

[1] Calvin and Stuart, *op. cit.*, p. 21. Cf. A. C. Hardy, *World Shipping* (Penguin, Harmondsworth, 1943), p. 154: " The bunker trade is not so much concerned with countries which have no coal as with ports which have a strategic position on a trade route ". For statistics of bunker exports from various groups of British ports in 1912–1928 see Jones, Cartwright and Guénault, *The Coalmining Industry* (London, 1939), p. 55.

[2] *Op. cit.*, pp. 243–244.

[3] Liverpool Shipowners' Association *Report*, 1938, p. 28. The force of this rise in British prices was weakened in so far as more efficient coal-burning vessels were being used in the middle 1930's. " For every ton of coal consumed the modern ship can carry about twice as much freight-paying cargo as the cargo ship of eight or ten years ago." (G. Tristram Edwards, *Lloyds List and Shipping Gazette*, Dec. 31, 1934.) Cf. W. Ayre, " The Outlook for British Shipbuilding and Marine Engineering," *Shipping World*, Jan. 9, 1935.

[4] Cf. Chamber of Shipping, *General Report*, 1938–39, p. 154.

[5] Calvin and Stuart, *op. cit.*, p. 21.

The conclusion to be drawn from the facts presented in these paragraphs would seem to be that by the 1930's, though fuel was still an internationally variable cost for small vessels plying only in their home and 'near-sea' trades, it was not a factor that had much effect on the competitiveness of the ocean-going vessels of any flag.

REPAIRS

Repairs account for about 10 per cent. of total costs but it is very difficult to compare them as between different countries because of the impossibility of deriving a standard unit of repairing work. The variation in this case is compounded of differences in the cost of labour and materials. It may be presumed, however, that these labour cost variations were much more important than any discrepancies in the cost of materials since the latter figure is very small in repairing as compared with new building, though it appears that in the middle 1930's repairing was handicapped by the difficulty of obtaining steel.[2] The following Table indicates roughly the former variations for three important European shipbuilding centres.

TABLE VIII

SHIPBUILDING HOURS AND TIME WAGE-RATES (IN SHILLINGS) IN 1925 IN GERMANY, HOLLAND AND BRITAIN[3]

	Hours per week	*Skilled*	*Semi-Skilled*	*Unskilled*
Germany-Hamburg	54	35/8–37/10	32/11–35/11	28/1–30/3
Netherlands-Rotterdam *circa*..	48	44/6	38/9	35/–
Great Britain—Tyne	47	55/6	41/6	38/6

According to this Table Great Britain had very much higher labour costs of repairing than her Continental competitors. Table II showed that returns on investments and depreciation costs accounted for 10·3–14·4 per cent. of the total costs for typical cargo and passenger vessels. Being internationally variable they thus seem to be of quite considerable importance in comparative cost analysis; but, when it is recalled that during the 1930's the international market in new and used vessels (especially in the latter) was very active, cost variations due to discrepancies in the value of tonnage in different countries would seem not to have been very great or as great, for example, as labour cost differences. The fact, however, that shipbuilding *did* take place in different countries and at different costs points to a different conclusion, as also does the realisation that only in the case of two of the leading maritime countries did "ships and boats" figure among

---

[1] A. C. Hardy, *op. cit.*, pp. 154–156.

[2] Cf. R. N. Thompson, *Yorkshire Post Trade Review*, Jan. 20, 1938.

[3] League of Nations, *Documentation on Shipbuilding*, International Economic Conference, 1929.

"principal imports or exports". They appeared among the main exports of the U.K. and among principal imports for France.[1]

During the middle 1920's contract applications for the construction of 7,000 gross ton Diesel tankers showed building prices to be £31·1–£31·3 per gross ton in the United Kingdom, £26–£29·3 per gross ton in Germany, and £41·6–£45 in the U.S.A. This sample, however, has been described as exaggerating the American costs, which by "common report" were 25 per cent. higher than the British;[2] the German and British figures, on the other hand, are such as might be expected to result from the labour cost discrepancies of their shipbuilding industries as shown in Table IX.

In June, 1927, the price of a new single deck British cargo steamer of 4,500 gross tons was £63,000 or £14 per gross ton; and it was estimated that the corresponding price in the U.S.A. would be 25 per cent. higher, i.e., £78,700.[3] (The British price of a "plain specification" 4,500 gross ton cargo vessel incidentally rose from £14 per gross ton in 1931–1933 to £24 in 1937–38[4]). This difference would affect annual operating costs to an appreciable degree—though measurement is almost impossible in view of the vagaries of interest rates.

Sir Osborne Mance and Mr. J. E. Wheeler say that: "In 1927 the average hourly wages of fifty-one classes of mechanics employed in shipbuilding were over 65 cents in the United States as against 28 cents in Great Britain. British overhead charges on certain types of construction were estimated to be about half of the American figure".[5] It is interesting to find that in an estimate of costs in Great Britain and the U.S.A. in 1929 Mance and Wheeler give the cost of materials as the same for both countries[6]; it would be instructive to know what authority there is for that equation.

Steel is one of the main items in the cost of shipbuilding; and the cheapness of this and other components has been emphasised as having an important bearing on competitiveness. There has undoubtedly been in the British steel industry considerable specialisation, as in Lanarkshire,[7] on the production of bars, plates and sections for shipbuilding. R. N. Thompson, however, stated in 1938 that: "While one realises the difficulties of the steel industry . . . it is to be hoped that the Government will exercise continuous vigilance in ensuring that the interests of the consuming industries are not jeopardised by the maintenance of a high price level under shelter of the tariff wall . . . . Marine engines are now costing approximately double what they were two years ago. . . . because of the very considerable wage increases given in that industry coupled with the heavy incidence of the increase in cost of brass, copper, iron, etc. Other items which have increased the cost of a ship are the new Board of Trade requirements, and the next year the new Factory Act comes into operation ".[1] No less an authority than the President of the Shipbuilding Employers' Federation stated in 1938 that " costs in America and France are still far above ours, but it is equally true that our total costs are quite definitely much above those of our Continental competitors ".[2] Sir James Lithgow in the same year believed that the international differences in shipbuilding costs were due to wage variations since " the cost of the unwrought raw materials cannot differ substantially from one country to another ".[3]

---

[1] Cf. U.S. Dept. of Commerce, *Reports on the Trade of Foreign Countries*.

[2] Berglund, *op. cit.*, pp. 245–246.

[3] *Ibid.*, p. 241.

[4] Chamber of Shipping *Report*, *Deep Sea Trades*, p. 24.

[5] *International Sea Transport* (Royal Inst. of Internat. Affairs and O.U.P., 1945), p. 91.

[6] *Ibidem.*

[7] Cf. C. A. Oakley, *Scottish Industry To-day* (Edinburgh and London, 1937), p. 250.

Data on comparative shipbuilding costs during the 1930's are difficult to obtain, partly because of problems of distinguishing between new building and repair work and between naval and commercial building. Some figures have, however, been assembled in the following Table IX.

TABLE IX

SHIPBUILDING COSTS OF THE UNITED KINGDOM, U.S.A. AND GERMANY IN 1935[4]

Countries	*Wages per person (in £s per annum)*	*Price of shipbuilding steel (£s per ton)*	*Value of vessel produced (in £s per g.t.)*
United Kingdom..	138	8·75 (*b*)	24·4 (*d*)
U.S.A.	252	10·20 (*c*)	
Germany	175 (*a*)		

NOTES TO TABLE.—(*a*) The German figure is the average of wages and salaries, whereas the U.S. figure definitely and the U.K. figure presumably (the 1935 Census Report is inexplicit here), refer to wages only; the British and American figures alone, therefore, are comparable. For fuller information about the wage rates of various classes of workers in the British shipbuilding industry see January issues of *The Shipbuilder and Marine Engineer Builder*. Allowance for the undervaluation of the £ in terms of dollars during 1935 would reduce only slightly the wage (and also the ship-plate price) level shown in Table IX.

(*b*) U.K. Ship-plates (Scotland); for movements of British prices after 1913 see British Iron and Steel Federation, *Statistics of the Iron and Steel Industries* (London, 1938), p. 26.

(*c*) The price of Pittsburgh steel plate, £8·13 a ton, was the basis of these figures; to this had to be added the cost of moving this steel to shipbuilding centres. Berglund (*op. cit.*, p. 248) states that the cost of moving " the approximate amount of steel to construct a 6,000 ton (gross) steamer " from Pittsburgh to the Atlantic coast was about $22,000 and to the Pacific $100,000. The former figure he described as a cost " large enough to be appreciable ". It is assumed that the cost did not change much in the five years after he wrote. The amount of steel required to construct an ordinary 6,000 g.t. steamer is about 2,650 tons (according to information kindly supplied by Messrs. Cammel Laird & Co. Ltd., Birkenhead). The cost of transporting the steel to the U.S. Atlantic yards was thus about £2·08 per ton and the delivery price there about £10·2; cf., however, the last note. Incidentally, the weight of steel angle bars and sections, smith's and sundry iron, forgings and castings used in shipbuilding together add up to about a half of that of ship-plates; and the weight of coal consumed is about four times that of the total steel used.[5]

---

[1] *Loc. cit.*

[2] A. Murray Stephen, " Shipbuilding Outlook," *Glasgow Herald Trade Review*, Dec. 29, 1938. Cf. J. D. La Valette, *British Trade with Holland* (1934), pp. 36–37, for a comparison with the Dutch shipbuilding industry in the 1920's pointing to a similar conclusion.

[3] " The Building of Ships—a British Survey ", *International Engineering Congress*, Glasgow, 1938. For steel cf. D. L. Burn, *The Economic History of Steel-making, 1867–1939* (1940), pp. 470–483.

[4] Calculated from statistical yearbooks and other official sources.

[5] Cf. J. Mitchell, *Shipbuilding and the Shipbuilding Industry* (London, 1926), pp. 20–21.

(*d*) This figure represents the production value per gross ton of steam vessels (including almost certainly machinery and fittings), the f.o.b. value of British exports of steam vessels (hull and fittings only) in 1935 being £19·9 per gross ton. Aggregate export figures (H.M.S.O. *Accounts of Trade and Navigation*) show that the average price per gross ton of British exports of new steam vessels (hull, fittings and machinery) was £32 in 1935 and that the average price of such exports during 1935–38 (incl.) was £29·8. The 1937 *Report of the Ships Replacement Committee* mentions "proposals for the building of 95 vessels aggregating 334,794 tons gross at an estimated cost of £6,463,350"; this works out at £19·3 per gross ton.

The Table shows plainly the high levels of American as compared with European shipbuilding costs. After 1937 the components of new ships became increasingly dearer in Europe generally. Moreover, in most countries save Great Britain the Governments fostered their shipbuilding industries—the acceptance of stock fish by Italy as half payment for a new fast passenger steamer sold to Norway being perhaps the most striking example of the almost universal concern for the maintenance of such industries.[1]

The height of American building costs was later brought into relief by the revelations of the public finance of the wartime programme which points to an American shipbuilding cost (including slipways ?) in 1943 of £90 per gross ton.[2] According to one American source the American cost during 1941 was 25–27 per cent. higher than in 1939. American labour cost actually increased 15–16 per cent. between June, 1941, and February, 1942,[3] as against a rise in British shipbuilding wages of 29 per cent. between September, 1939, and July, 1942.[4] The British total cost during 1939–43 was said to have risen by some 75 per cent.[5]—which would give a 1943 cost figure of about £55 per g.t. (on the basis of the information in Table IX) and an allowance for the rise in costs before 1939 induced by rearmament. This cost figure of £55 per g.t. compared with the American £90 agrees with L. C. Ord's statement that "British ships were built at about 60 per cent. of the American price of ships per ton".[6]

---

[1] *Angier's Shipping Report*, 1937.

[2] O. R. Hobson, *News Chronicle*, 24 Feb., 1943.

[3] *The United States News*, 24 Feb., 1942.

[4] Royal Econ. Soc. *Memorandum*, August, 1942.

[5] Sir Philip Haldin of Lambert and Holt Line, quoted Hobson, *loc. cit.*

[6] *The Secrets of Industry* (London, 1944), p. 97.

Mathematics for Economists

By W. J. Baumol

The immediate occasion for writing the following lines is the appearance of a new book by Professors Schumpeter and Crum under the title *Rudimentary Mathematics for Economists and Statisticians.*[1] Actually the volume is an elaborated and revised edition of a work which appeared under the same title as a supplement to the *Quarterly Journal of Economics* in March 1938. Now, however, it formally joins the small collection of works designed to introduce the non-mathematical economist to the facile methods and techniques which are the peculiar prerogative of the mathematical economist. It must be remarked that despite the implications of the title of the book I must, by default, speak from the viewpoint of the economists, since I can lay no claim to familiarity with the more advanced techniques of the statisticians.

It should first be made clear that the book is in complementary rather than competitive relation with the other standard works in the field. It is, as the title implies, designed to present only the very rudiments of analytic methods and so is, in a sense, considerably less ambitious than the others.

In outline, roughly the same ground is covered here as in Allen's *Mathematical Analysis for Economists*, but with calculated omissions, e.g., the calculus of variations, as well as omissions of detail throughout. As a result the book is not at first likely to prove terrifying to the neophite. The very fact that it is quite small is important in this respect, for it may impress the reader with the idea that the magnitude of his task is not beyond reason.

The book is smoothly written, and there is a commendable emphasis on fundamentals and first things first. This is particularly well demonstrated in that the entire book is oriented as an introduction to the differential and integral calculus, and yet it is nearly half through the book that the first mention is made of the derivative. The integral, of course, is not mentioned until even later. Indeed, if, as it has been remarked, those who peruse this literature may be divided into two classes—those who intend ultimately to master the mathematical technique and those who seek merely an indication of the meaning of such basic concepts as the derivative, the integral and the determinant—then it may well be that those who belong to the latter category will find the work in question to be entirely adequate and just about the easiest possible source. Certainly all advanced students of economic theory who do not plan to enter a serious study of mathematics will find that failure to peruse at least this book is a luxury they can ill afford. For considering the increasing employment of mathematical notation (not to mention the mathematical method proper) in the literature, I think the student dare not remain entirely innocent of the meaning of these basic notions.

---

[1] *Rudimentary Mathematics for Economists and Statisticians*, by W. L. Crum and Joseph A. Schumpeter, McGraw-Hill Book Company, Inc., New York–London, 183 pp. $2.50.

The book should also prove invaluable for review purposes to those who have already done some work in the subjects discussed, but who have subsequently forgotten much of it.

For those desiring to learn more than this minimum, the advantage to the beginner—the likelihood that it will prove the most readily palatable—becomes its weakness. Its limited size forces much of the treatment in the latter sections to be extremely sketchy. Much of the material is presented on the authors' word and some stated almost without elaboration. Where this is true, the simplicity of the book tends to be deceptive, for the uninitiated reader is likely to be confused ultimately by the list of ideas and techniques which are hinted at and not elaborated upon. After finishing the book he is apt to be discouraged by the implied magnitude of the task before him. Therefore this type of reader may find a work like that of Professor Allen considerably more suitable to his needs.

Moreover, the amount of preparation which the neophite can obtain from Professors Crum and Schumpeter's book is distinctly limited. I do not believe, for example, that a person whose mathematical armoury comes from this book alone will be able to follow much of the material in an average issue of *Econometrica*. There is indeed little question that this is clearly recognised by the authors. In fact, I doubt whether there is possible a single volume which will entirely satisfy this criterion.

There are two minor points of criticism which I should like to add. The first is that I believe the omission of exercises is somewhat unfortunate, since I think there is no substitute for " doing the thing yourself " as one of the requisities of mathematical education. Secondly, while the bias towards economic examples is definitely welcome, it is unfortunate that some of these examples tend to have an aura of artificiality which might perhaps induce distrust on the part of the reader.

I should like to add a few words at this point on the general subject of the teaching of mathematics for economists. It is my belief that the desire for special works on mathematics for economists is derived not only from the realisation of the need for a guide to the application of analytical technique to economic theory, but partly from a hope that there exists some way in which a reasonably thorough grounding in mathematics can be obtained in x easy lessons. It is clear, of course, to anyone who has ever encountered some of the variety in the mathematical literature, that such hope is doomed to frustration.

It is possible that a person can, with the expenditure of relatively little effort, be prepared sufficiently to peruse the contents of several specified writings which have some recourse to mathematical method. But if it is the intention of this individual to be enabled to follow the development in even a limited field, the quest is likely to turn into an endless pursuit as the work progresses and the variety of the employed mathematical techniques increases. Moreover, should the individual in question desire to do some original work employing even what Marshall is said to have referred to as ' a little potted calculus ', he is likely to find his preparation inadequate if it is obtained only from the material contained in one recapitulative volume.

The question is bound to arise whether it is really desirable and useful for the economics student to acquire a knowledge of mathematics. To this no ultimate answer may be possible outside of the system of value judgment of each individual. Certainly many, even the sceptical Marshall and Keynes, found a knowledge of mathematics to be useful in the development, if not the presentation, of their ideas. Moreover, there is a distinct advantage in being master of the idiom adopted by a growing number of the profession. But the question I am here considering does not involve this issue. It is my desire to discuss the courses which are likely to prove effective to the economist desiring to acquire a more or less comprehensive mathematical foundation once he has decided to do so, and on whatever grounds.

The ideal solution, of course, would be for these students of economic theory to study mathematics as such. There should be a fairly early stress on the place of a mathematical background, and more specific opportunities should perhaps be provided. All this is so obvious as to bear no elaboration. It is in conjunction with such a course of study that the full value of a book like Professor Allen's is apt to be realised, because it can aid considerably in the transition from pure mathematics to the mathematical theory of economics.

I should like to touch on but one other question before ending, and that is the emphasis that has been given to the calculus in the teaching of mathematics. Whether this originates from a desire to emulate the techniques of physical knowledge or from some other cause I cannot say. At any rate, I believe there is some reason for suspecting that the emphasis may be somewhat excessive.

For one thing, the techniques of the calculus are apt to be somewhat misleading in economic theory in that the emphasis on continuity which results from employment of this particular discipline can occasionally lead into difficulties. Another example that readily suggests itself is one which is likely to occur in discussions involving extreme values (maxima and minima) of a function. Thus very often when an economist speaks of some maximum, e.g., the maximisation of profit, he refers to a profit such that there exists no alternative course whereby he can obtain a profit larger than this one. It is, in other words, the greatest of possible profits. Now this criterion is not the same, nor will it always yield the same results, as the criterion for a maximum ordinarily employed in the calculus.[1]

Recently some theoretical use has been made of mathematical techniques not directly involving the calculus. Thus the basic concept of the difference equation which has been employed in some of the work on dynamics is an example of something which can be used independently of the calculus. The fascinating theory of point sets has also been used to considerable advantage in recent work. Neither of these subjects has, as far I know, been mentioned in any of the standard works on mathematics for economists.

Of course I do not suggest that the calculus is of minor use to the economist. Indeed, the greater part of the mathematical work in economics has employed its methods. It is merely that I believe the economist should be warned more carefully of its pitfalls and clearly shown that mathematical technique neither begins nor ends with the calculus.

We have yet before us the tantalising suggestion by Professor Von Neumann of a new mathematical discipline especially suited to the needs of the economists. Possibly when this materialises, a revolution in the teaching of mathematics for economists may yet be forced upon us.

---

[1] By the criterion of the calculus I mean, of course,

$$f'(m) = f''(m) = \ldots = f^{(2n-1)}(m) = 0, f^{(2n)}(m) < 0.$$

The latter merely assures us that the function in question at that point attains its maximum value for only a small neighbourhood of that point. Thus, in effect, the latter criterion is neither necessary nor sufficient for a function to attain its extreme value in the sense I have used the term. That it is not sufficient follows from what we have just said. That it is not necessary can be seen when it is realised that the extreme may occur at a point of discontinuity so that the "calculus criterion" becomes inapplicable.

Book Reviews

Freedom and Reform. Essays in Economics and Social Philosophy. By FRANK H. KNIGHT. Harper & Brothers. 1947. 409 pp. $3.50.

This volume of essays by Professor Knight, assembled and published by some of his pupils, is, in one sense, a sequel to the *Ethics of Competition* of 1935. A new generation sits at the feet of the master, the names at the bottom of the Preface are new names, but the master's voice has the authentic ring. In another sense, this volume is an extended version of the essay on " Ethics and Economic Reform ", published in this journal in 1939, and now reprinted here. Social philosophy and methodology provide the sole subject matter. For economics in the strict sense the reader will look in vain ; in this respect the subtitle is misleading. Professor Knight's chief quest is for a social ethics which could serve as a rational criterion of social action.

All human action is purposive, or at least only intelligible in so far as it is purposive. A society is stable to the extent to which its members feel that they " have a chance " in it, that within its framework the fulfilment of their hopes and wishes does not meet with insurmountable obstacles. No stable society can be based on mass frustration. In this respect, consistency of plans is a necessary, but by no means a sufficient, condition of success. The quest for social stability is thus seen to raise the general problem of consistent action. How can we be sure that the purposes sought by millions of individuals will be compatible with each other ?

Traditional liberalism tended to ignore this question. If a liberal was, as were most Continental liberals, a positivist, he assumed as a matter of course that the choice of ends, like all human action, was determined by " natural forces ", to interfere with which would be futile. If he was a utilitarian, and most Anglo-Saxon liberals were, he believed that the universal " pursuit of happiness " guaranteed the compatibility of individually sought ends. Neither position is acceptable. " Positive science excludes any notion of ' real cause ', which is to say any notion of activity or initiative on the part of the subject matter treated as cause. But in human phenomena, a subject is always in some sense and some degree being acted upon by itself. And for social phenomena we have also to recognise group self-action in the degree to which the society is ' democratic '. . . . Thus the difficulty becomes two-fold ; for even individual freedom is to the scientific intelligence ' transcendental ', mystical and unintelligible or simply illusory, but group freedom or self-determination is far worse in this respect " (p. 77n). Utilitarianism, on the other hand, quite apart from the ambiguity surrounding the " pleasure " principle, errs by taking the individual as given and, moreover, ascribing to it a degree of knowledge and foresight which in reality is quite beyond its reach.

Hence, the achievement of free consent on social action, the chief aim of Democracy, cannot be taken for granted. It is not an axiom of political theory, but a perennial problem, to be solved year after year, generation after generation. There are no short cuts to its solution. As it is essentially a moral problem, a purely mechanical device, like the majority rule, will not solve it. "Apart from this ideal, as an accepted constitutional principle, the notion of majority rule would probably never have been seriously defended by competent thinkers as essentially better than other forms of tyranny" (p. 79).

Consent is to be created through discussion. "Political discussion generally originates on the side of conflict of interests rather than difference of opinion; but discussion is possible only on the question of right—which is to say opinion as to the truth 'about' what is right. . . . It must be a co-operative quest for truth—about facts or about values, including truth itself" (p. 217). Unfortunately, the author's statements on the nature of political discussion are marred by a certain amount of ambiguity. In the Chicago lecture of 1944, here published for the first time, political discussion is more or less identified with that of "deliberative bodies" (p. 351); that seems to mean ordinary parliamentary procedure. But in a 1942 essay we were warned: "The most important fact is the moral and sinister one of the rarity and difficulty of genuine discussion or of the discussion attitude. The inveterate human tendency is to turn serious intercourse into a contest, a debate, or mere verbal clamor and combat instead of a co-operative quest for solutions. The truth interest in men is feeble in comparison with various romantic propensities" (p. 219). We are also told: "The most important fact about formal political process is that it is relatively unimportant, or of secondary importance. . . . The main difference between forms of government lies in the degree to which they obstruct or control or facilitate the informal and intellectually mysterious processes, or procedures, by which public opinion is formed" (p. 217).

What is somewhat confusing, Professor Knight holds that the process of establishing social consent "is essentially that of *discussion of values*" (author's italics) and that "Values are established or validated and recognised through *discussion* (author's italics), an activity which is at once social, intellectual, and creative" (p. 235). The startled reader with a traditional philosophical upbringing asks himself in despair, how values, as a transcendental category, can be "validated" by the mere fact of our discussing them. This question finds its answer in *The Rights of Man and Natural Law*, a critical discussion of Maritain's philosophy. Here Professor Knight, who has thus far eschewed all metaphysical problems, emerges as a radical empiricist with a "sociological" philosophy of value, not unlike Durkheim's. Truth is declared to be a social category.

The achievement of consent on social action is thus always problematical. In practice all important decisions have to be left to officials and professional politicians. Professor Knight's political position may perhaps best be described as "philosophical conservatism". "Society has strong reasons for maintaining powerful brakes on departures from the 'beaten path'. Primitive society was wise in its conservatism, for it knew at least that the group had previously lived somehow, both as individuals and as a group. And liberal society, it now seems, has acted frivolously in switching over quite suddenly to an extreme opposite set of assumptions, that the new is better than the old, that the good consists in change, or at least in freedom of the individual to make changes, rather than in stability. This emphasis on the necessity of an *onus probandi* in favour of conservatism, and against change, must stand as our last word at this point" (p. 74). This is not very dissimilar from Professor Hayek's "true individualism".

While it is here clearly impossible to deal at all adequately with even the most impressive fragments of Knightian thought, the author's views on methodology seem to call for special attention. He objects to the "methodological individualism" of economic theory and utilitarianism, the interdependence between which is perhaps over-emphasised, on the well known ground that society is no more the product of individuals than individuals are the products of society. This, of course, is an old objection which rests on a methodological misunderstanding. There can be no science which "explains society" as a whole. Science, as Max Weber pointed out, does not deal with concrete phenomena and their relationships, but with those conceptual elements of them which are analytically separable from other elements. To show that a certain method fails to explain a concrete phenomenon as a whole is really to prove that it is a scientific method.

The question we have to ask is merely whether there exists a scientific method which permits us to explain the social "conditioning" of individual action with half the degree of precision attained, for instance, in modern economic analysis. Professor Knight believes that such a method does exist, and points to linguistics as an example. "The outstanding fact in the study of linguistics is that no one proposes to explain or interpret the evolution of language in terms of conscious or rational individual motivation. Indeed, it is something of a paradox that, although language is evidently one of the most important instrumentalities or tools of social life—and hence of all human life—and is consciously and purposively used as a tool, effort to increase the functional efficiency of language is found to play a relatively small part in linguistic change" (p. 256).

Such a statement contrasts oddly with the author's vigorous denunciation of Hegelianism elsewhere in the book. The social sciences explain social phenomena by making certain aspects of them *intelligible*, by reducing them to categories of the mind. There is no escape from the dilemma that, if we are to make the "social element" the basis of explanation, we either have to fall back upon the hypothesis of a " collective mind " or must take recourse to those methods of natural science, the glaring inadequacy of which in our field no one has more brilliantly exposed than our author. If we reject the individual mind, of which alone we can assert with certainty that it is free, as the cause of action, we face a straight choice between Hegelianism and " scientism ".

This is not an easy book to read. For all his strictures on it, Professor Knight is himself a paragon of methodological individualism. He owes little to others, although the influence of Max Weber on him is perceptible throughout. The reader of a volume of collected papers as a rule enjoys the advantage of seeing the same problems successively attacked from different angles. In this case it must be said that he really needs it. Our author thinks nothing of switching over from one problem to another which, though possibly akin to the first in his own fast-moving mind, is not obviously so to the bewildered reader. He excels at the judicious summing-up of contradictory statements, as in the string of brilliant aphorisms on human nature in the 1944 essay on " Human Nature and World Democracy ", which delight the reader, but do little to help him to understand the trend of the argument.

Yet, it is to the ideas set forth in these pages that in the end the serious student of Western civilisation, baffled by its many problems, tired by political oratory, stupefied by the official intellectual oracles, will have to turn. Professor Knight's main conclusion, that Western Society, having once set out on the path of " problem-solving " freedom, can neither return to a static morality nor deliver itself into the hands of scientific quacks of the " social engineering " profession, will surely stand the test of time.

L. M. LACHMANN.

Monetary Theory. By GEORGE N. HALM. Second Edition. 1946. The Blakiston Company: Philadelphia and Toronto. 491 pp. $3.50.

The first edition of this book appeared in 1942. As many others, having been then in the wilderness, will, like myself, now be meeting the book for the first time, I propose to review the work as a whole and not merely the changes introduced in this second edition.

On the jacket the publishers describe the book as " at once a text and a reference book. It is one of the few attempts to integrate monetary analysis with general economic analysis, with particular reference to the banking problems involved. . . . Comprehensive in scope, coherent and easily understandable because of its arrangement and the clear and analytical style with which it is written, *Monetary Theory* will serve as a useful guide to the complexities of modern economic problems." This is a fair enough description and the only important remaining question is, at what stage in the student's career is the book likely to be of maximum value ? With the strengths and weaknesses of the book in mind, I suggest that this is just the one for the general run of English university students to read about the middle of their third year—the better ones perhaps in the previous Long Vacation. The book is very much (and with full acknowledgments) a synthesis of the works of the great authorities. Late in their second year and early in their third year most students read some of the outstanding advanced works, and are immensely stimulated by them, but after sampling three or four contrasting approaches the student is all too often confused and quickly "goes stale" unless he is helped in getting the great works set in proper relation to each other. It is just at this stage that *Monetary Theory* should be used.

Alternatively the book may be used for its three separate parts: "The Supply and Value of Money", "Money and Foreign Exchange" and "Money, Investment and Employment". Of these I found the first the least satisfactory. Substantially its scope is that of the old-fashioned text-books on money. The author is convinced "that the introduction of a large amount of factual data tends to confuse the student's understanding of the working of the monetary system", and I think he is right. There is much to be said on similar grounds for less, in expounding the elementary theory of money, of the backward glance at early theories, and I wish Dr. Halm had been a little more austere in this direction.

The second part, "Money and Foreign Exchange", is extremely useful. It is this part that has been most substantially revised since the first edition. The account of the Bretton Woods arrangements (and their background) is as good as I have found anywhere.

The last part, "Money, Investment and Employment", covers the Keynesian revolution of thought—the development of the theory of employment, the synthesis of monetary theory and general economic theory. The author shows wide understanding and an excellent sense of proportion. It is this part that I recommend most strongly to help the third year student over his bout of indigestion.

R. S. SAYERS.

India. A Re-statement. By SIR REGINALD COUPLAND. Geoffrey Cumberlege, Oxford University Press. London. 1946. 300 pp. 12s. 6d.

It would be a grave mistake to assume that the recent dramatic developments, culminating in the emergence of "India" and "Pakistan" as self-governing Dominions (at least until June, 1948), have solved the constitutional (let alone the broader social and—above all—communal!) problems of what used to be the Empire of India. Hence it would also be a mistake to suppose that these developments have rendered obsolete or irrelevant Sir Reginald Coupland's well-known study of the constitutional problems of India, which originally appeared in the form of a three-volume report.

On the contrary, his latest volume, although it was written before the present transitional solution had been discovered, provides material of the most profound interest to all who are concerned, however remotely, with the immediate constitutional problems of these "Dominions", or with the future of "India" as a whole. This volume, which is primarily designed to provide a bird's-eye view of the "main facts of India's connexion with Britain" (p. v) for the general reader, summarises the main results of the above-mentioned report; and adds a short sketch of the historical background and of other than constitutional questions. In fact it throws much light not only on the development of the British connexion and of India during the period of British Rule, but also on the emergence and nature of those present-day social and political alignments and problems which constitute the basic elements in the present difficult situation.

The book is divided into four parts, dealing respectively with the origin and development of British Rule in India, the nature and results of that Rule, the process of liberation (up to 1945) and the future outlook.

Parts I and II, although too slight to be entirely satisfactory, provide admirable summaries of the main trends and problems, and a fair-minded presentation of the Indian attitude towards British Rule. Part III is more solid, and explains clearly how and why communal feeling has become progressively more intense and more bitter, especially since the inauguration of Provincial Self-Government in 1935. Chapter IX contains a skilful analysis of the development of that constitutional deadlock which persisted from September, 1939, until Lord Mountbatten's recent coup. Part IV discusses the advantages and disadvantages of Partition and the pros and cons of various proposals for solving the problem. Sir Reginald Coupland's own proposal is for the establishment of an "Agency" Central Government (with limited, delegated functions) and new Regional Governments, in between the Central and Provincial Governments. These proposals, when first published (i.e., in 1942), were regarded in many quarters as highly academic and unrealistic—if not actually fantastic. It is interesting to compare them with the present transitional settlement, and to note to how great an extent the latter is consistent with the eventual emergence of constitutional arrangements incorporating Sir Reginald Coupland's principles, even though the increased communal tension has meanwhile necessitated recognition of the sovereign rights of the main communal regions (including the Indian States). In working out the details of the many still unsettled constitutional problems, Sir Reginald Coupland's analysis offers much sage advice. Nevertheless, this volume appears on the whole disappointing to one who has read the original report, and it is to be hoped that one of its chief functions may be to stimulate readers to study the earlier, longer, and more illuminating work.

VERA ANSTEY.

Britain and World Trade: A Report by P.E.P. (Published by P.E.P., 16, Queen Anne's Gate, London, S.W.1. June, 1947.) 199 pp., tables, appendices, index. 18s.

It is highly appropriate that the successor to the P.E.P. Report on International Trade of a decade ago should be concerned with Britain's foreign trade problem. While the present Report is more interested in the longer-term aspects of that problem the transitional difficulties are not neglected. The work is intended for the intelligent layman and as such it should be judged. From experience on Merseyside it would appear that there are at least four difficulties to be surmounted in order to obtain the layman's full appreciation of the problem. There is, in the first place, the necessity to overcome a reluctance to accept the arithmetic of the position. In the second place, whereas there is ready agreement on the shortcomings of bilateralism within the economy the same policy has a curious fascination in the international field. In the third place, there is a tendency to discount even the most cautiously drawn implications of a failure to solve the balance of payments problem. This may be due in part to a certain Micawberish optimism. Certainly it is not unrelated to the experience after 1931 when it was found that all the dreadful consequences of the abandonment of the gold standard did not ensue. How can one be sure this time? Lastly, reliance for a long-term solution on the substantial increase in world trade in manufactures seems to clash with experience. Who are we going to sell to when all countries are industrialised? Taking these points as testing-points, the present Report succeeds admirably in its purpose.

The Report is divided into two parts. Part One is entitled " World Trade and Employment " and is intended to supply enough background for Britain's task to be seen in perspective. The three chapters sketch the course of world trade in the decade after 1929, commercial policies in that decade and the main features of the principal United Nations economic agencies. The forty pages of this part are a triumph of selection. It is concluded that for the successful restoration of universal multilateral trade two conditions besides political security must be fulfilled: the maintenance of full employment within national economies (particularly the American and British) and " an efficient international monetary system, which is free from the deflationary stresses of the Gold Standard, and in which all nations have complete confidence ".

Part Two is an examination of Britain's export task. Transitional problems have seriously worsened since the Report was finished in January, 1947, and these developments have in some cases rudely upset calculations. But the morals apply *a fortiori*: in the short run the solution is increased production for export and in the longer-run, if multilateral trading does not break down and world trade expands, the solution is successful selling at competitive prices of things foreigners want. In order to make the smaller firms export-minded it is suggested that a Public Trading Corporation should be established. This Corporation would guarantee export orders, negotiate long-term commerical agreements, supervise trade with state-trading monopolies and " perhaps also provide an emergency source of demand in the event of a slump in our overseas markets ". The imperfections of British selling methods and agencies have for long been canvassed and in many cases rightly so. But whether an agency should have so many functions and the whole world for its stage may be questioned, particularly in view of the initial successes of such experiments as the Hambro Zone Marketing scheme which are based on intensive cultivation of a fairly homogeneous concentration of consuming power. Another plea is for the setting up, possibly as a Public Utility Corporation, of a National Credit Enquiry Agency with the function of examining the credit-worthiness of prospective overseas clients. In a final chapter the Report enquires into the possible alternative solutions likely to be available should a dollar scarcity arise. If the scarcity was general it is suggested that the Government should, on the basis of up-to-date plans, switch purchases to other countries and attempt to supply these countries' deficiencies of American goods. If the shortage was peculiar to Britain it is recommended that in the first instance there should be borrowing from the Fund or from other countries and as a last resort there could be a combination of import rationing and exchange devaluation. If the Report was being re-drafted to-day there is little doubt that greater prominence would—as it most certainly should—be given to an expansion of the export sector. Import restrictions could hardly go far without imperilling the export drive while it is premature in the present state of demand to devalue sterling.

D. J. MORGAN.

Introduction to Economics. By A. CAIRNCROSS. Butterworth and Co. Ltd. 1944. 430 pp. 12s. 6d.

One good consequence of the inordinately long delay in writing this review has been that *Introduction to Economics* can now be judged after two years' use by first year students. It may seem unduly harsh to have reversed in that time a formerly favourable opinion partly because undigested phrases from it have been brought up and recognised in students' essays and examination papers. But allowing for the jaundice usual in an examiner, there may be implications of general interest in the sort of mistakes repeatedly made by students who have clearly been using Mr. Cairncross's book.

The first impression of the book is that the over-all plan is excellent. After the usual introductory chapter, there is a large section (of 95 pages) on the Structure of Industry, which has a tendency to over-concentrate on the economies of large-scale production, with the danger that the careless reader has the impression that economies necessarily follow scale, and which is not uncoloured by the wartime planner's optimism about planning in peace. The next section on supply and demand (74 pages) has the great merit in its plan that the theories of production and consumption are fully integrated in the price problem, and not treated separately as additions. Then come sections on Distribution, International Trade, Money and Banking, and lastly the State and the Economic Order.

The first obvious defect of the book is a lack of balance which Mr. Cairncross himself admits in his preface. For example, seventeen pages are devoted to a chapter on the finance of large-scale production, and thirty-two more to the growth of large-scale production, while in nine pages we have definitions of demand and supply, supply and demand curves used, the notion of the equilibrium price and changes in demand and supply, the meaning, determinants, and use, of the concepts of elasticity of demand and supply. But the most serious lack of balance arises not from the disproportionate space given to different topics, but from the fact that the level of difficulty is most uneven. After an elementary jog of some ten or more pages, come two or three pages of difficulty which are beyond the grasp of even the brightest beginner.

Without doubt this is an excellent book in many ways, and if one expresses disagreement, it is with regard to its intended use rather than to its contents. The author says that the book is " written for those who, anxious to understand the complexities of the economic order, and the causes of economic disorder, find it difficult to master the economist's technique of thinking, and hesitate to plunge too abruptly into analytical deeps ". Now, these readers may include the serious layman, students taking a one-year course, or those not specialising in economics. For these people, it can be recommended (with some reservations), but it is clear that the book's main sales are intended to be among first-year University students who, usually, are going to spend three whole years on the subject, and it is not possible to cater successfully for both types of readers at once. The first group of readers need a fairly " realistic " book, that is to say that they will not have much patience with abstract and simplifying assumptions, and these will have to be removed at least by the end (if indeed they are ever stated). They will have little use for a theory of price which tells them nothing, for example, of the causes and consequences of advertisement, or which does not allow them to explain why vegetable prices are higher in one district than in another, or why they often remain high while the price to the farmer is falling. This book has small sections on market imperfection, price and service competition, selling costs, and oligopoly in the first chapter on supply, called Competition and Monopoly, and they are fairly easy to understand, using that verb in the rather superficial way that the non-scientific person can " understand ", say, a clear Third-Programme talk on wireless transmission. But it is quite probable that the serious scientific student will know less of the practical possibilities of wireless after the first half-dozen lectures of a long course, than if he listens to a good talk on the Third Programme on the subject. In other words, to write, successfully, what we call in London an Intermediate textbook, requires that the author first makes up his mind on certain basic assumptions, as to what he thinks the whole course should be, how to give the best foundation for that course, what should be the method of teaching economics, and above all he must have the courage to leave things out, to abstract, and to be bold in stating his simplified assumptions. There is no doubt that the method of successive approximation must be followed in teaching Economics, as it must in any science, but for some reason we are more willing to allow the wireless specialist to begin his explanations by assuming that the earth is flat, and that the ionosphere is a uniform reflecting medium for wireless waves, than we are to allow the economist to assume that competitive forces work perfectly, or that, on the other hand, there is such a thing as pure monopoly. (Perhaps the reason is simply that the beginner in economics knows something of the real economic world before he begins, and we are cowards in front of his greater irritation with abstraction.) Analysis on the basis of these simple assumptions, giving the simple laws of supply and demand, are the necessary scaffolding to be erected before we can start on the building proper. If, in the past, there has been the danger that the scaffolding obstructs the view forever, that is the fault of later teachers. Mr. Cairncross's book falls down before the fundamental test of a first textbook, it does not drive home the laws of supply and demand, mainly because the author's " realism " makes him contemptuous of the supply curve. Similarly the student has no time to get hold of a simple theory of the value of money before he finds himself comparing the Cambridge equation and the liquidity-preference meanings of the demand for money.

Reference was made earlier to the mistakes repeatedly made by students in essays. There is only space here to say that beginners who talk about, say, indifference curves, selling costs, oligopoly, or who reconcile the supply and demand for loanable funds and the liquidity-preference theory of the rate of interest, seldom understand what they are talking about. The approach of the book is more suited to those whose only essay in economics this will be, but for them unfortunately the level of difficulty is much too high.

And yet one must admit that it is a good book and would want to use it. The students who have found it useful, and for whom it can be recommended, are second-year students not specialising in economics. A book which starts from scratch and rises to a good height of difficulty is often forced to presume knowledge, and " we shall return to this later " becomes a much-used phrase. This does not matter for a second-year student, and the general level of difficulty and absence of too elaborate technical apparatus should be ideal for them.

JEAN KERRIGAN.

What I Remember (with an introduction by G. M. TREVELYAN). By MARY PALEY MARSHALL. Cambridge University Press. 1947. 54 pp. 7s. 6d.

By-Ways of Cambridge History. By FLORENCE ADA KEYNES. Cambridge University Press. 1947. 158 pp. 7s. 6d.

The O.E.D. defines supererogation as "the performance of good works beyond what God requires", and after the notices by Lord Keynes of A. M. and Mrs. Marshall in the *Economic Journal* and the noble appreciation of J. M. K. by Austin Robinson in its March 1947 issue there might seem little more to say; and yet but for the shortage of paper and stenography I could dictate new matter for hours.

At the outset of my academic career forty years ago it was my supreme good fortune to have in Cambridge three lady friends, Mrs. Marshall, Mrs. Keynes and Mrs. Rackham. All were at Newnham and there is something almost laughable in the contrast between these three distinguished pupils of Newnham College and the old-time jokes about blue-stocking Newnhamites. Of living ladies I must not speak, but Mrs. Marshall, the Mary Paley of those days, was a real beauty, and readers will turn at once to the photos of Miss Clough and her first five students in 1871 and of Mrs. Keynes sitting at the feet of Miss Clough in 1880.

It is needless to say that I had heard already from Mrs. Marshall's own lips much of *What I Remember*. To me the new part was the appendix on her father, the Rev. Thomas Paley. I did not know that he was a fellow of John's and that she therefore was a Johnian both by parentage and adoption. The Rev. Paley dabbled in photography, and I wonder whether he derived his interest from W. H. Fox Talbot of Trinity, whose Talbot-type in concept preceded and later ousted that of Daguerre. Be that as it may, the amateur photographer begat an artist. I have on my drawing room wall my favourite among Mrs. Marshall's water colours. At her death she left to me her bound volume of paintings, mostly of the Tyrol, and they are now in the safe-keeping of the Marshall Library. Of course, it is only a dream (but Professor Foxwell, the Senior Moralist of 1870, once told me that he owed his Fellowship at John's to the exposition of a recent dream, and I greatly suspect he was one of the two wicked examiners who by their 'fainter praise' caused Mary Paley to be given, shall I call it ? a II. 1 in the Moral Science tripos of 1874.) The dream is this. My father, being a strong evangelical (I was named Charles Ryle after the first Bishop of Liverpool), I was invited to the Paley's Rectory for tea and games one Saturday afternoon. Even then Mary used to tell the story of how she gave up sugar as a war economy when the Crimean War broke out, and after tea we played quartettes. "Mr. Fay, have you Mrs. Sopps, the washerwoman ? (I had only Mr. Hoggard, the gardener.) No, Miss Mary, but have you

Mr. Wills the carpenter and Mr. Popple the shoemaker? Thank you, (then turning to her sister) and have you Mrs. Sopps the washerwoman? Thank you, that makes the set."

It is my dreary lot to walk frequently from Grantchester Meadows to the Station along Bateman Street, but I have succeeded in turning it into a joy. For I make believe that I am one of the runners taking the tripos papers to Mary at Dr. Kennedy's house in Bateman Street, now a resident Catholic School for girls. One day I am A. M., and then I halt at each lamp post taking a pull at Plato. Another day, when the birds are singing, I hear music and am Sedley Taylor whom I once visited in Trinity College to consult on profit sharing (the cartoon of Sedley Taylor faces p. 18). Another day I am Henry Sidgwick stammering out one of the limericks he used to tell to Maynard Keynes on Royston Golf Links. Recently I have been Dr. Venn, logician and moral philosopher, and I speculate on whether there was some mystical affinity between him and Maynard via Sidgwick and his father from which issued the *Treatise on Probability*, until I arrive at the end of the street, where luckily at 8.30 a.m. there is a policeman to guide me and other children across Hills Road.

In successive chapters Mrs. Marshall takes us from Ufford (the Northants not the Suffolk Ufford) to Cambridge, then to Bristol, then to Sicily, then back to England to Jowett and Oxford, and finally back again to Cambridge for the rest of Alfred's and her life.

After Palermo and the roof with the umbrella under which he discovered elasticity of demand—I went there to try and locate it in 1938 but failed—he and she most of all loved the Tyrol, and here in 1934 I was more successful. I met Philomena, saw the eyrie in which he wrote, found the exact spot from which Mrs. Marshall painted my view of the Dolomites and was taken to the little stream where Marshall and Böhm-Bawerk disputed (it is said) over the rate of interest, he reluctantly coming down from his retreat and the Austrian eagerly fresh from a mountain climb, both wives anxious to terminate the dispute without bloodshed. I was taken too to the huge bedroom where the feast of reconciliation took place. Again and again Mrs. Marshall and I have talked Tyrol, but of the many bits I can find only room for this. "A. M.'s fiscal memo. was lost at a place called Pedraces. The postmistress of Pedraces lost it because she wanted to steal the stamps on it." But getting to the Tyrol was the real difficulty; for he would only announce the night before when he was going to start and it depended on the progress made in Vol. II the day before. "He would reach the frontier with ten boxes of books and a screwdriver, which he presented to the customs officer for action. Each shelf was a box, and when put together they made a bookcase."

This is what Mrs. Marshall remembers. May I, to illumine the book (for a book by her is really a book about Alfred), remember three further incidents? Incident 1 was the genesis of Co-operation at Home and Abroad. Pigou sent me to Marshall when I had decided to dissert, and eventually on Marshall's method we arrived at the subject and he spread some forty books on his sofa for me to " smell out ". " And when you want tea blow down the tube and Mary will see to it." After copying the titles in dazed fashion in a very dark room (for he had designed a study which was to afford the maximum of light and in consequence it was almost entirely dark), I summoned up courage, blew down the tube and said respectfully, " Will Mary please bring up the tea ? ". " Yes, replied Mrs. Marshall, Sarah is just coming." I had confused Sarah with Mary, and the memory makes my spine tickle still.

Incident 2 was sports day. I was bidden to tea at 4 o'clock for a game of Italian Croquet. Marshall's lawn was humpy with two hollows between us and the Jack. Mrs. Marshall made her stroke with a graceful elastic demand curve. A. M. was more ingenious. His stroke involved a double curve, like one of those increasing returns curves, and the only drawback was that his ball never emerged from the second hollow. Mary, he said, had forgotten to weed it (which reminds me of a famous postcard received after I had sent him a number of corrections for the sixth edition of 1910 : " Thanks for corrections. I have passed them on to Mary. The mistakes are her department. Yours, A. M."). My shot was unorthodox. I went straight at it, crashed the Jack on to the bed, and was disqualified. After that came tea and whilst I drank it Marshall looked through me with his radiant eyes and said, " my coach said I'd lose my First if I didn't give up sport ". " What was your sport, Professor Marshall ? " And from him came, in bated monosyllable, " Bowls ".

Incident 3 was machine gun day. After the debacle of March, 1918, I was sent home by my Colonel to seek an interview with Smuts in the matter of more machine guns. We had drafted a long memorandum, the main part by myself, and the appendix by my Colonel. I took it to A. M. and an hour later he rang me up and said, " come round at once, your future is at stake ". I went round, and he began, " what is in the appendix is the important matter and ought to be put in front. I am not prepared to argue. Take a pencil and write ". And then he dictated to me an entirely new and far better draft of the memorandum which showed a complete familiarity both with the technical and with the tactical handling of machine guns. The memorandum ultimately produced the extra guns. For Smuts, like myself, was a Fellow of Christ's. Can you wonder that I worshipped Marshall ?

Mrs. Keynes' book is of a very different type and I can express my considered judgment of it by saying simply that every page is at the level of Maitland, from whom there are rightly seven citations. First she gives us The Guildhall and the Market Place—she was our Mayor in 1932 the year of her Golden Wedding : then The Office of High Steward of the Borough of Cambridge—Maynard at his death held this office. Chapter III is on Cambridge Waits and Orlando Gibbons, and it is to this chapter that my only little criticism applies. I wish that the numbered Instruments on Plate 11 facing p. 65 had, as a footnote for unmusical people like myself, their names. But how it all ties in! King's Chapel and Music and the Arts Theatre built and endowed by her son and perhaps the most precious bequest he has made to us apart from the memory of his personality. For be it remembered that since our science of political economy was founded by Adam Smith there have been only two of his stature, Alfred Marshall and J. M. Keynes. The one was my revered master, the other my closest college friend, who came into residence on the very day that I did, October 1, 1902. Chapter IV deals with Barnwell Priory and the Old Abbey House, Chapter VII with a Town Plan for Cambridge in the Eighteenth Century, both full of the scholarship which we associate with Mary Bateson and F. W. Maitland. Chapter VI presents Damaris Cudworth—a Cambridge woman of the seventeenth century. Cudworth was Master of Christ's and therefore I take in this chapter a pious interest. After reading it I am persuaded that the lady should be in the stained glass window of famous women in Liverpool Cathedral. Why Oxford comes First, asks Chapter V. My answer is simple enough—it sounds better. As does Army and Navy, but most people think that the Navy is the senior service. I was omitting Mendicity House, the subject of the concluding chapter, and this recalls to me a year in my early donhood when I visited Cambridge Workhouse under the guidance of Mrs. Keynes and was put on the committee for the rescue of small boys, from which I retired when I discovered that Miss Eglantine Jebb considered that the main duty of a certain meeting was to prevent an erring boy from joining the Navy. But it is all different now. Mendicity House, like the Spinning House, whereof I was told much as senior proctor, has gone and so has the C.O.S. It is now Central Aid, and there is no reproach to anyone. But I have exceeded my space and must stop, merely adding that it is no good trying to buy Mrs. Keynes' book until the second edition is out. As each edition appears, I hope that the author will add up for us the number of terms which her husband has kept in the University. He is now, as I calculate, at 95 on the 226 mark and still going strong.

C. R. Fay.

Price Quantity Interactions in Business Cycles. By Frederick C. Mills. New York. National Bureau of Economic Research. 1946. 160 pp. $1.50.

As is the case in so many of the publications of the National Bureau of Economic Research, the author is primarily preoccupied with an essentially uncritical dissemination of the relevant data. In this book, in the words of the description on the cover, he seeks on the basis of American experience to set forth " . . . characteristics of cyclical fluctuations in the flow of monetary payments for major classes of commodities and defines the parts played by price and physical volume as factors in these fluctuations ".

Several measures of the relationship between price and output changes over time and of the patterns of outlay over what may be considered to be a representative business cycle are introduced. With the aid of these, data relevant to the marketing of 56 commodities for periods ranging from 14 to 80 years are classified and presented to the reader. Almost without exception, and in accord with his purpose, the author does not undertake to draw theoretical conclusions from the material. Even where such conclusions are suggested, considerable reluctance on his part seems to be indicated (e.g., n. 13, Ch. 5).

Since the analysis is meant to apply to a composite representative business cycle, very few data are presented relative to the actual course of events in the various cases on which the discussion is based. Thus we have little information as to the consistency with which the patterns presented tended to occur in practice. We do have the author's assurance that " Fifty-four of the (sixty-four composite) commodities listed . . . have patterns of behaviour sufficiently consistent to justify the conclusion that they were generated by truly cyclical forces " (p. 28). We are also promised supplementary data in forthcoming publications some of which may be relevant to this point.

As a result of this absence of any clear-cut index of reliability, it is indeed hazardous to attempt any sort of generalisation on the basis of the data presented. Subject to this caution, however, it may be of interest to set down some of the information which may be of theoretical import, and to attempt an examination as to what may be indicated by it.

First, we may consider briefly the pattern of general price and quantity fluctuations. These, of course, roughly follow the cyclical pattern, rising and falling with business activity. It is interesting, however, that during the early phases of recovery the increase in outlay primarily takes the form of an increase in quantity of commodities disposed of; subsequently there is a period for which increased outlay occurs primarily as a result of price increases, but thereafter quantity increases in importance again. To some extent this pattern seems to be repeated in the various sectors of the economy considered. This suggests that in the early stages of recovery increased demand can be met out of unused capacity which is present throughout much of the economy. As a result the initial increase in demand has little effect on prices. As demand and output increase, however, bottlenecks are encountered, and in the period before capacity can be increased the pressure of demand forces prices upward. Later, of course, some increase in capacity can be effected and so quantity increases resume some of their earlier importance.

During the downswing the significance of the pattern seems more apparent when considered by groups of commodities rather than as an aggregate. In general, contraction in quantity seems to be more important than contraction in price for such classes as producer goods, capital goods, durable goods and metals (note that considerable overlap in the categories is involved). Notable among those classes for which price is predominant are foods. This seems to be consistent with the hypothesis that the former group includes commodities in the sale and pricing of which there are oligopolistic rigidities present, whereas the latter category (foods) is produced under conditions more closely approximating pure competition.

This hypothesis also seems consistent with the indicated result that while price and quantity fluctuations are both relatively greater for producer than for consumer goods (a conclusion consistent with the arguments of the " acceleration principle "), quantity fluctuations vary far more widely than do price fluctuations. For if it is true that the patterns occuring in the case of producer goods reflect the presence of oligopoly this would tend to damp down price fluctuations, and hence keep them more in line with the smaller changes in consumer goods prices. The brunt of the fluctuation in producer goods outlay would then tend to be borne by quantity changes.

There remains a somewhat more interesting point, more interesting because of its controversial implications. This is the evidence to the effect that outlay on consumer goods near the bottom of the cycle tends to turn upwards some months before outlay on capital goods in general and producer goods in general. On the other hand, while at the top of the cycle consumer goods outlay does not fall at a time obviously different from the fall in producer goods outlay, deceleration in the former seems to begin considerably before the peak is reached, while in the case of the latter the fall seems to be somewhat more abrupt, with the magnitude of the rise in outlay on producer goods continuing high until the fall.

Now for reasons already emphasised, and because of the general danger inherent in interpretation of empirical data, the import of the foregoing results is in considerable doubt. However, it does seem to weigh against those recent theoretical analyses of the business cycle which have tended to ascribe these fluctuations primarily to changes in the marginal efficiency of capital resulting from the accumulation and depletion of capital in prosperity and depression respectively ; these leading to a changed level of investment, and only then, through the mechanism of the multiplier, to a change in consumer outlay. Rather, the data in question may tend to lend more credence to hypotheses involving the interaction of the multiplier with the acceleration principle, with perhaps the inclusion of exogenous factors to account for the upturn. It should be noted, incidentally, that both of these theoretical structures can be consistent with the general Keynesian analysis. In any case it is clear that some support is given to those analyses which ascribe priority in time to changes in consumer outlay.

In concluding, I should like to point out that full responsibility for all of the interpretations here placed on the information presented in this book must be taken by the reviewer. They are presented merely to indicate the sort of use to which the data might be put by the theoretician.

W. J. BAUMOL.

The Farmer in the Second World War. By WALTER W. WILCOX. Ames, Iowa. Iowa State College Press. 1947. xii + 410 pp.

This book presents a comprehensive review of the economic experience of the U.S. agricultural population over the war years, together with a detailed account of the official measures, chiefly on a federal level, affecting agriculture and the distribution of agricultural products. The treatment is very largely descriptive, which makes it difficult at times to obtain a clear picture of individual problems, and even more difficult to get a view of complex or inter-related groups of problems. But this weakness is far outweighed by the solid, and indeed exceptional, merits of the book. Professor Wilcox, who is an agricultural economist of considerable academic standing, participated throughout the war in the management of a mid-western farm, and was for some time a member of the War Food Administration. There is ample evidence of both first-hand knowledge of farming and of acquaintance with the framing and execution of agricultural policy on federal and state levels.

The discussion is remarkably fair and objective. The author's detachment is seen at its best in the account of the various pressure groups within and outside Congress. Their activities are regarded as features of the economic landscape of the same order as consumers' preferences, producers' alternatives, or technological changes. The space given to these activities makes it clear that the author is by no means indifferent to them; yet they are reviewed with a cool and impressive impartiality. Writers on these topics, especially in this country, are wont to select one or other of these groups for special censure, or to exonerate at least by implication one section or class. The discussion in this book suggests that impartiality in this field is possible after all. It is only when discussing the allocation of Government contracts during the war that the author's high standards do not seem to be so fully maintained; he does not seem to have allowed sufficiently for the saving in resources as well as in time by allocating the contracts to areas of existing industrial concentration.

Professor Wilcox's review of the work of Government agencies, primarily, of course, of the Department of Agriculture, is also very fair; both achievements and failures are listed, usually with a concise account of the principal causal factors. There is much material of interest on the sources and outcome of inter-agency and inter-bureau conflicts, as well as some illuminating remarks on the difficulty of the co-ordination of functionally specialised departments. It would appear that no more in America than in this country can a problem be regarded as wholly solved by giving it a new name, or by renaming the agency, board or commission which is supposed to handle it, or even by regrouping the constituent departments of the agency. Much of what the author has to say is relevant to present-day British problems: the ineffectiveness even of intensive "educational programs" (propaganda) compared to slight changes in economic incentives; the spread of controls horizontally and vertically following the introduction of a few price controls; the reasons for the farmers' preference for producer-controlled marketing against Government subsidies; and many other matters. Without signifying approval or disapproval, Professor Wilcox presents the economic, political and administrative difficulties which would have resulted from a continued maintenance of price controls beyond June 1946, and which lead the administration to decide on their abolition. These difficulties seem to have received little attention in the British press.

On the whole there is much interesting material in this book even outside the field indicated by its title.

P. T. BAUER.

Business Finance and Banking. By NEIL H. JACOBY and RAYMOND J. SAULNIER. New York. National Bureau of Economic Research. 1947. xviii, 241 pp. $3.50.

It has long been apparent that the classical view of the functions of the commercial banks—as the providers of short-term liquidity to business enterprises—has lost its validity. On the one hand, business appears to be increasingly self-reliant in this field; on the other, Government securities have come to play an overwhelmingly important part in the structure of banking assets. There is a natural tendency to attribute this change to World War II, during which, certainly, its most spectacular manifestations developed. Closer study shews, however, that this view ignores slow but powerful tendencies of far earlier date; in this volume we have, for the first time, a fully documented survey of the whole complicated process.

The Financial Research Programme of the National Bureau of Economic Research has already published eight partial studies of changes, during this century, in the financial structure of business and in the institutional arrangements for financing business enterprise. The volume now under review uses the information thus accumulated, together with four similar but unpublished surveys, to bring together and analyse the significant factors bearing on the relationship of business finance and banking since 1900. There emerges a complex but clear picture of an evolutionary process which dates back to the first decade of the century, and is marked by continuous adjustment to a whole series of different economic impulses.

The book starts with a survey of the demand and supply position of credit for the " non-financial " business community in 1940. It then undertakes a detailed study of the changes in this field since 1900, in the position of the commercial banks, in the availability of competing agencies, in the lending techniques adopted, and finally in the major underlying economic forces. A short section on the effects of World War II leads finally to an examination of the probable future role of the banks.

A very wide range of statistical tabulations, profusely illustrated with charts (some in colour), supports the arguments and yields valuable clues to the dominant factors. It is, for example, fundamental that since 1900 there has been a considerable increase in the average size of American business, and that large enterprises are less reliant on bank accommodation than smaller ones. Again, in the 'twenties and 'thirties new lending agencies developed, especially in the field of consumer credits, while at the same time insurance companies became close rivals to the banks as the major source of business credit. On the other hand, the banks themselves launched out into relatively new fields, such as term loans, or with new techniques—for example, financing of " accounts receivable " and field warehouse receipts—which were more suitable for the " small man " upon whose demands for accommodation it became increasingly necessary for them to rely. The timing of this development is plausibly accounted for by the severe drop in the 'thirties in the average yield of portfolio securities.

The position in 1940 yields equally significant factors for analysis; it is indeed difficult to make a selection, since almost every paragraph contains fresh material, but two somewhat unexpected points may be cited. On the one hand, nearly half of all bank credit to " non-financial " business was of a long-term character, though it should be noted that 47 per cent. of such credit had been extended by the open-market purchase of securities. On the other, it is shewn that trade credit was used by two or three times as many enterprises as bank credit, while significant differences existed between the extent to which reliance upon credit of either kind was characteristic of wholesale, retail, construction, service and manufacturing enterprises.

The authors have brought together a mass of significant facts, and have handled their data with great skill. The picture which emerges is intelligible and convincing, and the arguments with which it is buttressed are firmly based. Every future study of the American banking system will need to take account of their conclusions.

J. K. HORSEFIELD.

Soviet Foreign Trade. By Alexander Baykov. Princeton University Press. London: Geoffrey Cumberlege, Oxford University Press. 1947. 125 pp. 11s. 6d.

This unpretentious little volume aims at tracing briefly the historical development of Russia's foreign trade since 1909; at describing the Soviet system of foreign trade on the eve of the Second World War; and at distinguishing the facts likely to influence the development and trends of Soviet foreign trade in the post-war period. The greater part of the work consists of descriptive material, accompanied by numerous statistical tables, illustrating trade developments and the pre-'39 nature, organisation and distribution of Soviet foreign trade. It is intended for the general reader rather than the expert, and from this point of view the most valuable chapters are those dealing with the organisation, and changes in the organisation, of Soviet trade. These include brief accounts of the chief administrative bodies dealing with foreign trade at various periods between 1918 and 1939. The most interesting chapter, and the only one that attempts more than a summary of official facts and figures, is Chapter VI, on the Post-War Prospects in Soviet Foreign Trade. In this latter chapter Dr. Baykov is definitely optimistic, predicting both more willingness to expand imports and greater export resources in the post-war period than during the pre-war period. The discussion of these conclusions is, however, too short to provide convincing evidence, and the conclusions emerge mainly as the author's unsupported opinions.

In some ways the book is disappointing, coming as it does from someone of Dr. Baykov's standing. It provides bare bones, when the reader hoped for an interpretation that would help to explain Soviet commercial policy, how that policy is actually put into practice, and what have been the more fundamental factors underlying the technical aspects of Soviet sales and purchases. Moreover, even the facts and figures have been selected on an all too narrow basis. For instance, no adequate explanation is given of why in a planned economy, where quantities and prices of imports are centrally controlled, the device of import tariffs has been retained. All that is said is that " customs duties are merely an additional barrier against the importation of goods, in private luggage and postal parcels, but not a general deterrent against the import of foreign goods " (p. 10), and that the People's Commissariat of Foreign Trade studies " problems of customs and tariffs and supervises the administration of customs " (p. 24). What, then, is the Soviet tariff system? What functions does it perform? We are not told. Another example of an obvious omission is that (except in the Annex on Soviet-American Trade Relations) the numerous tables showing the development of trade, since 1913, with particular countries give trade totals only and fail to indicate the nature of the principal imports and exports and of how these have changed under the Soviet regime. But above all one regrets Dr. Baykov's deliberate decision to omit discussion of the " dangers and difficulties which may develop in the economic relations between the U.S.S.R. and other countries " (p. vi), for the alleged reasons that sufficient literature already exists on the theoretical aspect of the subject, and that more than a theoretical discussion would require " a detailed description of the complicated economic relations between the U.S.S.R. and other countries " (p. vi).

To the present reviewer these reasons appear quite inadequate to explain the omission of what would have been a discussion of first-class interest and importance to all who desire the development of sound commercial relationships between their country and the U.S.S.R.—and of far greater interest and importance than the mere enumeration of foreign trade statistics and the dry description of the official organisations dealing with Soviet foreign trade which, as already stated, occupy the greater part of this work. In other words, the reader can hardly fail to regret Dr. Baykov's preoccupation with facts and figures rather than with problems and causal relationships.

VERA ANSTEY.

Commercial Policy in the Canadian Economy. By O. J. McDIARMID. Harvard University Press. London: Geoffrey Cumberlege, Oxford University Press. 1947. 388 pp. 25s. 6d.

Mr. McDiarmid has made a valiant and painstaking attempt to describe and analyse the effects of Canada's commercial (particularly tariff) policy, with special reference to the period 1867–1939. He has performed his descriptive task competently and conscientiously, dealing faithfully with the colonial period, the clash of regional and vested interests, the rise, wane and eventual revival of reciprocity with the United States, the development of a national tariff system —first for revenue, later to protect the growing industries—and of Imperial preference, and with more recent trends, including the growing importance of administrative control as a protective weapon, with special reference to valuation for tariff purposes and dumping penalties. Stress is finally laid on the " very real integration " of the Canadian and American industrial systems, which is proving an outstandingly important factor at the present day. Nevertheless, it must be admitted that the purely descriptive and often very detailed sections—especially those dealing with the earlier periods—make dull reading. On the analytical and interpretative side he is perhaps less successful, or at least less comprehensive, but far more interesting. His best chapters, and those to which the attention of most readers will undoubtedly be chiefly directed, are therefore Chapter XIII on " Tariff Administration ", Chapters XIV and XV, both of which deal with " Protection and Industrial Maturity ", and his summary of conclusions in Chapter XVI. His somewhat limited and indefinite generalisations as to the influence of the tariff on, for instance, the national income, investment, and consumption may be attributed partly to the great difficulty of differentiating between the effects of tariffs (and other instruments of policy) and of other facts and factors, and partly to the method pursued. He has chosen to limit his detailed economic analysis chiefly to a group of representative industries (i.e., the steel, farm machinery, textile and automobile industries) rather than to attempt wider research and generalisation. He himself clearly recognises the limitations of his method and the need for more comprehensive quantitative analysis before broader conclusions can be reached. But certain interesting conclusions do emerge: for instance that the iron and steel subsidies and tariffs proved a disturbing rather than a stabilising factor for the Canadian economy as a whole, and that by increasing certain costs and reducing real incomes in certain industries and areas, the tariff has favoured Central Canada at the expense of the maritime and Western Provinces.

There is no bibliography, and footnote references sometimes fail to give the date of publication of quoted sources.

VERA ANSTEY.

The Post-War Rupee. By V. K. R. V. RAO. Indian Council of World Affairs. Oxford University Press. 1946. 48 pp. 2s. 6d.

This reprint of Professor Rao's stimulating little pamphlet discusses two main problems: (i) should the present exchange-rate of the rupee be altered in the near future?; and (ii) what should be the relation between the Indian and the International monetary systems? Incidentally Professor Rao also touches upon a problem of great topical interest, i.e., that of the liquidation of India's sterling assets.

The pamphlet was written (in 1945) before it had been decided that India should join the International Monetary Fund on the basis of the 1s. 6d. rupee, but the arguments presented still deserve consideration, as it is more than likely, when the transition from wartime to peacetime conditions has been completed, that some revision of India's position in relation to the Fund may become necessary. Fortunately the constitution of the Fund does not preclude the possibility of such revision.

The argument for devaluation of the rupee is that Indian prices have risen far more than British prices. On the other hand, the Indian inflation seems to have been held in check since 1944, whilst the danger of inflation in Britain is by no means over. The existence of the large sterling balances of the Indian Reserve Bank suggests that appreciation might be a more appropriate policy. Professor Rao's sane, if unexciting, conclusion is that it would at present be premature to decide what should be the long-term rupee exchange ratio, and hence that for the time being no change should be made. He insists, however, that the question should be reviewed, without prejudice, at a later stage when post-war trends in relative prices and costs have become clearer.

With regard to longer-term currency requirements, Professor Rao argues that India will have an active programme of economic development, involving control of imports and large-scale public expenditure; that this will not be consistent with rigid stability of exchange nor with an international currency order which fails to pay special attention to the needs of backward areas; and that, in particular, India requires a more substantial quota under the International Monetary Fund—especially if satisfactory arrangements cannot quickly be made for the conversion of a substantial part of the sterling balances into capital goods required for economic reconstruction in India. In this latter case India will certainly also require a large loan from the International Bank, which, it is suggested, might be based on the security of her sterling balances, amortization charges being paid by the United Kingdom.

VERA ANSTEY.

Die Schweiz als Kleinstaat in der Weltwirtschaft. Herausgegeben vom Schweizerischen Institut für Aussenwirtschafts– und Marktforschung an der Handelshochschule St. Gallen. Verlag der Fehrschen Buchhandlung, St. Gallen. 1945. xvi + 362 pp.

This book was written with a purpose, namely that of showing both to the Swiss people themselves and to the world at large how the Swiss economy has been built up and what position it occupies in to-day's international economic system. In other words, it has the object of winning understanding of Switzerland's economic achievements and needs. But the work is interesting beyond this immediate object which has been well achieved. If the facts of Swiss economic development and policy set out in the book are not new, they are here presented in an eminently readable and lucid manner. The most important chapters from the point of view of international economics are those by Dr. Hans Bachmann entitled " Von den Grundlagen der schweizerischen Volkswirtschaft ", by Professor William E. Rappard on " La Suisse et le marché du monde ", and by Dr. Alfred Bosshardt on " Schweizerische Aussenhandelspolitik ". All these chapters emphasise that Switzerland has been able to attain a high degree of prosperity and welfare for her people by staking for centuries a large proportion of her fortunes on world trade in the widest sense. Furthermore, they give an impressive idea of the contributions which Switzerland has made towards building up and sustaining the international economic system.

The book is exclusively concerned with Switzerland, and none of the authors draws any more general conclusions. No doubt, the conditions to which each small country has to adapt its economic policy vary as they do for larger countries, perhaps even more so. But the reasons why Switzerland, one of the oldest European " small " countries, has succeeded in building up a prosperous economy, and other more recently established " small " countries have failed to do so, are obvious. The task undertaken by the authors of this book might well be carried further by investigating the fundamental factors which affect the life and prosperity of small countries. It would be worth while, for instance, to examine in what conditions the economic interest of small countries would best be served by a policy of economic regionalism, and when rather by each country's individual participation in world trade. There is no need to point out that small countries are not entirely free in making this choice; Switzerland was forced after 1880 to abandon her traditional free-trade policy by the protectionist measures adopted by her big neighbours, most of all France.

The contemplated English edition of the book should be welcomed by all concerned in the reconstruction of world trade.

CHARLOTTE LEUBUSCHER.

SHORTER NOTICES

National Product Since 1869. By S. KUZNETS. New York: National Bureau of Economic Research. 1946. xvi + 239 pp. Price $3.00.

This book is based primarily on material which has been published in the past by the National Bureau and other American authors or authorities, but some earlier publications have been revised and others readjusted to suit the present context. The book is designed as a technical reference book and the general reader would be interested only in the main tables; but he is recommended to read some of the text as a precaution against the inappropriate use of the figures.

The book consists of four distinct parts. In Part I the well-known series for 1919–43 are collected, revised and analysed. In Part II estimates are given for overlapping decades since 1869, based chiefly on recent estimates by W. H. Shaw; the data are insufficient to permit the preparation of annual estimates, and even the decade estimates involve the use of somewhat bold assumptions. But whatever the technical objections, the broad picture of the rise of the American national income which emerges must be fascinating to the economist. Part III is purely technical and gives details of the estimates relating to consumers' services utilised in previous parts; the scanty data make the results of this part doubtful. In Part IV independent estimates of the reproducible national wealth between 1880 and 1922 are compared with figures of annual capital formation; and with the help of the latter more up-to-date estimates of the national wealth are made. The analysis of capital equipment by users is then derived from these series.

National Income of Palestine, 1944. Government Printer, Palestine. No. 5 of 1946. 48 pp. 100 mils.

The British White Papers on national income resulted in similar efforts not only in the Dominions but also in Palestine. Mr. G. E. F.

Wood, the Government statistician, published estimates for 1939, 1942 and 1943, but it was only after the lapse of wartime secrecy that his successor, Mr. P. J. Loftus, was able to publish the first detailed estimates for 1944.

The national income of Palestine is estimated by adding the net outputs of different branches of activity; the accuracy of data obviously varies from branch to branch but no margins of error are given. An attempt is then made to calculate the output of 1944 in terms of 1939 prices which, although not very accurate, nevertheless shows a substantial rise in real incomes. Next, military expenditure—the chief cause of the inflation—is analysed. The attempt to estimate consumption and savings results in rather dubious figures; the estimate of consumption is not explained, and the residual item of savings seems, on the face of it, excessive. Further, interesting comparisons are made as regards the distribution of income between Arabs and Jews, and between individuals.

Those used to the British White Paper will welcome details of the estimates which follow a somewhat woolly introduction; but they may find the mixture of fact finding and statements of opinion sometimes irritating and some of the technical embellishments (e.g., the application of Pareto's curve to Arab land holdings) superfluous.

Books Received

AGARWALA, A. N.: *Indian Labour Problems.* East End Publishers, Allahabad. 1947. xxii, 406 pp. Rs. 16. 35s.

AGARWALA, A. N.: *Position and Prospects of India's Foreign Trade.* East End Publishers, Allahabad. 1947. x, 319 pp. Rs. 12. 21s.

ALLAIS, M.: *Economie et Intérêt.* Librairie des Publications Officielles, Paris. 1947. Vol. I, 422 pp.; Vol. II, pp. 429-800.

BAMBERGER, M., LETELLIER, G. and MARJOLIN, R.: *Les Chômeurs.* Librairie du Recueil Sirey, Paris. 1942. 436 pp.

Banco do Brasil S.A. 1808–1947. Rodrigues & Cia, Rio de Janeiro. 1947. 288 pp.

BARHAM, H.: *The Building Industry.* Industrial Democracy Series No. 1. St. Botolph Publishing Co. 1947. 100 pp. 5s.

BAUMGARTNER, R.: *Die Wirtschaftliche Bedeutung der chemischen Industrie in Basel.* A. Francke Ltd., Co., Berne. 1947. 197 pp. S.Fr. 14.

BLACK, E. I. and READ, D. B.: *Old People's Welfare on Merseyside.* The University Press of Liverpool. 1947. vi, 110 pp. 2s. 6d.

BLACK, R. D. COLLINSON: *1847–1947 Centenary Volume.* Eason and Son Ltd. 1947. viii, 150 pp. 12s. 6d.

COLE, G. D. H.: *The Intelligent Man's Guide to the Post-War World.* Victor Gollancz Ltd. 1947. 1,143 pp. 21s.

Le Contrôle des Changes. Tome II. Conférence Permanente des Hautes Etudes Internationales, Paris. 1947. 282 pp.

COPELAND, M. T. and TOWL, A. R.: *The Board of Directors and Business Management.* Harvard University, Boston. 1947. xii, 202 pp. $3.25.

COSTA, E. DA: *Indian Industry Today and Tomorrow.* Longmans, Green and Co. 1947. xi, 166 pp. 4s. 6d.

CRAGG, R. CECIL: *Canadian Democracy and the Economic Settlement.* The Ryerson Press, Toronto. 1947. xlii, 262 pp. $4.00.

D'ALBERGO, E. and others: *Les Banques Italiennes et Suisses.* Librairie du Recueil Sirey, Paris. 1940. viii, 451 pp.

DAMALAS, B. V.: *La Réorganisation de l'Economie Mondiale.* Presses Universitaires de France, Paris. 1947. 525 pp. Fr. 500.

DANVERS, A. C. and MARTIN, L. B.: *The Small Man's Guide to Profitable Investing.* Vawser and Wiles Ltd. London. 1947. 167 pp. 4s. 6d.

DEHOVE, G.: *Impôt, Economie et Politique.* Presses Universitaires de France, Paris. 1947. xvi, 406 pp. Fr. 400.

DICKINSON, R. E.: *City, Region and Regionalism.* Kegan Paul, Trench, Trubner and Co. Ltd. 1947. xv, 327, 11 pp. 21s.

DUFFY, DORIS: *The Role of Government in Labor-Management Production Committees.* The Catholic University of America Press, Washington. 1947. 227 pp.

L'Economie de la Ruhr. Presses Universitaires de France, Paris. 1947. xi, 82 pp. + diagrams. Fr. 360.

L'Economie de la Sarre. Presses Universitaires de France, Paris. 1947. 147 pp. + diagrams. Fr. 280.

FOGARTY, M. P.: *Plan Your Own Industries.* Basil Blackwell. 1947. viii, 320 pp. 25s.

FOURASTIE, J.: *La Civilisation de 1960.* Presses Universitaires de France, Paris. 1947. 118 pp.

FRANKEL, S. H.: *An Economic Approach.* Basil Blackwell. 1947. 14 pp.

GADGIL, D. R.: *The Federal Problem in India.* Gokhale Institute of Politics and Economics, Poona. 1947. vii, 196 pp. Rs. 8. 16s.

GHOSH, D.: *Pressure of Population and Economic Efficiency in India.* Oxford University Press. 1947. 109 pp. Rs. 3-4. 7s. 6d.

GINSBERG, M.: *Reason and Unreason in Society.* Longmans, Green and Co. 1947. vii, 327 pp. 15s.

GONNARD, G.: *La Conquête Portugaise.* Librairie de Medicis, Paris. 1947. 162 pp. Fr. 150.

GOPAL, M. H.: *Basis of Public Salaries.* The Mysore Printing and Publishing House. Mysore City. 1946. viii, 140 pp. Rs. 3.

GUDIN, E.: *Principios de Economia Monetaria.* 2nd Edition. Agir, Rio de Janeiro. 1947. 358 pp.

HARROD, R.: *Are these Hardships Necessary?* Rupert Hart-Davis, London. 1947. 178 pp. 5s.

HAUSSMANN, F.: *Der Wandel des Internationalen Kartellbegriffs.* A. Francke Ltd. Co., Berne. 1947. viii, 160 pp. S.Fr. 11.50.

HAWTREY, R. G.: *The Gold Standard in Theory and Practice.* Fifth Edition. Longmans, Green and Co. 1947. ix, 280 pp. 9s. 6d.

HENDERSON, SIR HUBERT: *The Uses and Abuses of Economic Planning.* Cambridge University Press. 1947. 32 pp. 1s. 6d.

HEXNER, E.: *International Cartels.* Sir Isaac Pitman and Sons Ltd. 1946. xiv, 555 pp. 30s.

HOFFMANN, W.: *Wachstum und Wachstumsformen der Englischen Industriewirtschaft.* Verlag von Gustav Fischer, Jena. 1940. x, 284 pp.

HORNE, H. O.: *A History of Savings Banks.* Oxford University Press. 1947. xii, 407 pp. 18s.

Howe, E.: *The London Compositor.* Oxford University Press. 1947. 528 pp. 30s.

International Economic Organisations. H.M.S.O. 1947. 40 pp. 1s.

Isaac, J.: *Economics of Migration.* Kegan Paul, Trench, Trubner and Co. Ltd. 1947. xii, 285 pp. 18s.

Joshi, T. M.: *Bombay Finance (1921-1946).* Gokhale Institute of Politics and Economics, Poona. 1947. vi, 217 pp. Rs. 7-8-0. 15s.

Kirk, D.: *Europe's Population in the Inter-war Years.* League of Nations. 1946. xii, 303 pp.

Lachmann, K.: *The Renaissance of the Individual.* Charles Skilton Ltd. 1947. xvi, 143 pp. 7s. 6d.

Lever, E. A.: *Advertising and Economic Theory.* Oxford University Press. 1947. xi, 132 pp. 9s. 6d.

Marlio, L.: *The Aluminium Cartel.* Faber and Faber Ltd. 1947. xi, 130 pp. $1.50.

Mayo, E.: *The Political Problem of Industrial Civilization.* Harvard University. 1947. 26 pp. 50 c.

National Committee on Immigration Policy. *Immigration and Population Policy.* New York. 1947. 56 pp. 25 c.

Neumark, F.: *Theorie und Praxis der modernen Einkommenbesteuerung.* A. Francke Ltd. Co., Berne. 1947. 456 pp. S.Fr. 35.

Parravicini, G.: *L'Ordinamento bancario e l'attività creditizia.* Rizzoli, Editore, Rome. 1947. 194 pp. L. 400.

Peddie, J. Taylor: *The Wealth Standard.* Williams and Norgate Ltd. 1947. 235 pp. 15s.

Peterson, Florence: *Survey of Labor Economics.* Harper and Bros. 1947. xix, 843 pp. $4.00.

Post-war Problems of Migration. Milbank Memorial Fund, New York. 1947. 173 pp. $1.0.

The Reform of the Higher Civil Service. Fabian Publications Ltd. Victor Gollancz Ltd. 1947. 61 pp. 2s. 6d.

Robbins, Lionel: *The Economic Problem in Peace and War.* Macmillan & Co. 1947. vii, 86 pp. 3s. 6d.

Robson, W. A.: *Justice and Administrative Law.* Stevens and Sons Ltd. 1947. xxxii, 554 pp. 25s.

Roche, Ch. La: *Die Schweizerische Konjunkturpolitik in der Nachkriegszeit.* A. Francke Ltd. Co., Berne. 1947. 158 pp. S.Fr. 11.

Salvi, P. G.: *Commodity Exchanges.* The Co-operators' Book Depot, Bombay. 1947. xii, 237 pp. Rs. 15s. [*sic*].

SCHULTE, SISTER MARY YOLANDE: *Wage Theories Before Certain Industry Committees of the Wage and Hour Administration.* The Catholic University of America Press, Washington, D.C. 1946. vii, 341 pp.

SEWELL, G.: *Europe's Fate.* Victor Gollancz Ltd. 1947. 96 pp. 6s.

SHAW, A. G. L.: *The Economic Development of Australia.* Longmans, Green and Co. 1946. 193 pp. 7s. 6d. (Revised Edition.)

SILZ, E.: *Le Relèvement Economique et Financier de la Hollande.* Centre d'Etudes de Politique Etrangère, Paris. 1947. 101 pp. Fr. 60.

STREET, SIR ARTHUR: *The Public Corporation in British Experience.* Institute of Public Administration, London. 1947. 36 pp. 2s. 6d.

TAUTSCHER, A.: *Staatswirtschaftslehre des Kameralismus.* A. Francke Ltd. Co., Berne. 1947. 127 pp. S.Fr. 14.50.

Les Transferts Internationaux de Populations. Presses Universitaires de France, Paris. 1946. 556 pp. Fr. 600.

TSIANG, SHO-CHIEH: *The Variations of Real Wages and Profit Margins in Relation to the Trade Cycle.* Sir Isaac Pitman and Sons Ltd. 1947. 174 pp. 25s.

VAN TIL, W.: *Economic Roads for American Democracy.* McGraw-Hill Publishing Co. Ltd. 1947. vii, 252 pp. 9s.

WHITTAKER, E.: *Elements of Economics.* Longmans, Green and Co. 1947. xvii, 393 pp. 18s. 6d.

Made and Printed in England by The Hereford Times Ltd., General Printing Works (T.U.), London and Hereford. L4458.